MITSUBISHI

Mitsubishi PC Interface Board

MELSEC

CC-Link IE Field Network Interface Board User's Manual (For SW1DNC-CCIEF-B)

MODEL

Q80BD-J71GF11-T2
Q81BD-J71GF11-T2

●SAFETY PRECAUTIONS●

(Read these precautions before using this product.)

Before using this product, please read this manual and the relevant manuals carefully and pay full attention to safety to handle the product correctly.
Note that these precautions apply only to this product. Refer to the user's manual of your CPU module for safety precautions on programmable controller systems.

In this manual, the safety precautions are classified into two levels: "⚠WARNING" and "⚠CAUTION".

⚠ WARNING	Indicates that incorrect handling may cause hazardous conditions, resulting in death or severe injury.
⚠ CAUTION	Indicates that incorrect handling may cause hazardous conditions, resulting in minor or moderate injury or property damage.

Under some circumstances, failure to observe the precautions given under "⚠CAUTION" may lead to serious consequences.
Observe the precautions of both levels because they are important for personal and system safety.

Make sure that the end users read this manual and then keep the manual in a safe place for future reference.

[Design Precautions]

⚠WARNING

- Configure safety circuits external to the programmable controller to ensure that the entire system operates safely even when a fault occurs in a personal computer. Failure to do so may result in an accident due to an incorrect output or malfunction.
  (1) Emergency stop circuits, protection circuits, and protective interlock circuits for conflicting operations (such as forward/reverse rotations or upper/lower limit positioning) must be configured external to the programmable controller.
  (2) The station to which the board is installed may be disconnected from the data link due to a data link error. If this occurs, the data output from the station and written to other stations before the error will be held until the station is reconnected to the network (until its data link is restarted). Provide a mechanism for data link status monitoring and error handling for each station that is connected to the data link system.
- For the operating status of each station after a communication failure, refer to this manual. Incorrect output or malfunction due to a communication failure may result in an accident.
- When changing data during operation, configure an interlock circuit in the program to ensure that the entire system will always operate safely. Configure an interlock circuit in the program, and determine corrective actions to be taken between the personal computer and CPU module in case of a communication failure.

⚠CAUTION

- Do not install the control lines or communication cables together with the main circuit lines or power cables. Keep a distance of 100mm or more between them. Failure to do so may result in malfunction due to noise.

[Installation Precautions]

⚠WARNING

- Turn off the power for the system in all phases before installing the board to or removing it from the personal computer. Failure to do so may result in electric shock or cause the board to fail or malfunction.
- Do not touch any connectors while power is on. Doing so may cause electric shock or malfunction.

⚠CAUTION

- Use the board in an environment that meets the general specifications in this manual. Failure to do so may result in electric shock, fire, malfunction, or damage to or deterioration of the product.
- Do not directly touch any conductive parts and electronic components of the board. Doing so can cause malfunction or failure of the board.
- Do not disassemble or modify the board. Doing so may cause failure, malfunction, injury, or a fire.
- Fix the board by tighten the board-fixing screws within the specified torque range. Undertightening may cause drop of the component or wire, short circuit, or malfunction. Overtightening may damage the screw and/or board, resulting in drop, short circuit, or malfunction.
  For the tightening torque of the board-fixing screws, refer to the manual supplied with the personal computer.
- Before handling the board, touch a conducting object such as a grounded metal to discharge the static electricity from the human body. Failure to do so may cause the board to fail or malfunction.
- Install the board to a personal computer which is compliant with PCI standard or PCI Express® standard (Section 2.5 Operating Environment). Failure to do so may cause a failure or malfunction.
- Securely insert the board into the PCI slot following the board installation instruction of the personal computer. Incorrect insertion of the board may cause malfunction, failure, or drop of the board.
- When installing the board, take care not to get injured by an implemented component or a surrounding member.
- When installing the board, take care not to contact with other boards.
- Handle the board in a place where static electricity will not be generated. Failure to do so may cause a failure or malfunction.
- The board is included in an antistatic envelope. When storing or transporting it, be sure to put it in the antistatic envelope. Failure to do so may cause a failure or malfunction.
- Do not drop or apply a strong impact to the board. Doing so may cause a failure or malfunction.

[Wiring Precautions]

⚠ WARNING

- Turn off the power for the system in all phases before installing the board or starting wiring. Failure to do so may result in electric shock, damage to the product, or malfunction.
- After installation of the board and wiring, attach the cover on the module before turning it on for operation. Failure to do so may result in electric shock.

⚠ CAUTION

- Place the communication cable connected to the board in a duct or clamp them. If not, dangling cables may swing or inadvertently be pulled, resulting in damage to the board or cables or malfunctions due to poor contact.
- When disconnecting the cable from the board, do not pull the cable by the cable part. Pulling the cable connected to the board may result in malfunction or damage to the board or cable.
- Prevent foreign matter such as dust or wire chips from entering the personal computer. Such foreign matter may cause a fire, failure, or malfunction.
- Do not install the communication cables together with the main circuit lines or power cables. Keep a distance of 100mm or more between them. Failure to do so may result in malfunction due to noise.
- Securely plug the communication cable to the connector of the board. Then, check for any incomplete connection. Poor contact may cause an erroneous input or output.
- Always ground the personal computer to the protective ground conductor. Failure to do so may cause a malfunction.

[Startup and Maintenance Precautions]

⚠WARNING

- Turn off the power for the system in all phases before cleaning the board or retightening the board-fixing screws. Failure to do so may result in electric shock, or cause a failure or malfunction of the board.
- Turn off the power for the system in all phases before installing the board to or removing it from the personal computer. Failure to do so may result in electric shock or cause the board to fail or malfunction.
- Do not connect or disconnect any communication cable while power is on. Doing so may result in a malfunction.

⚠CAUTION

- Thoroughly read the manual and ensure the safety before performing program modification during operation, forced output, operation such as RUN, STOP, and PAUSE. An improper operation will result in mechanical damage or accidents.
- Do not disassemble or modify the boards. Doing so may cause failure, malfunction, injury, or a fire.
- Fix the board by tighten the board-fixing screws within the specified torque range. Undertightening may cause drop of the component or wire, short circuit, or malfunction. Overtightening may damage the screw and/or board, resulting in drop, short circuit, or malfunction.
  For the tightening torque of the board-fixing screws, refer to the manual supplied with the personal computer.
- Before handling the board, touch a conducting object such as a grounded metal to discharge the static electricity from the human body. Failure to do so may cause the board to fail or malfunction.
- The board is included in an antistatic envelope. When storing or transporting it, be sure to put it in the antistatic envelope. Failure to do so may cause a failure or malfunction.
- The microprocessor built in the board will reach a high temperature during operation. Do not touch it directly when replacing the board. Doing so may result in a failure, malfunction or injury.

[Disposal Precautions]

⚠CAUTION

- When disposing of this product, treat it as industrial waste.

●CONDITIONS OF USE FOR THE PRODUCT●

(1) Mitsubishi programmable controller ("the PRODUCT") shall be used in conditions;
i) where any problem, fault or failure occurring in the PRODUCT, if any, shall not lead to any major or serious accident; and
ii) where the backup and fail-safe function are systematically or automatically provided outside of the PRODUCT for the case of any problem, fault or failure occurring in the PRODUCT.

(2) The PRODUCT has been designed and manufactured for the purpose of being used in general industries.
MITSUBISHI SHALL HAVE NO RESPONSIBILITY OR LIABILITY (INCLUDING, BUT NOT LIMITED TO ANY AND ALL RESPONSIBILITY OR LIABILITY BASED ON CONTRACT, WARRANTY, TORT, PRODUCT LIABILITY) FOR ANY INJURY OR DEATH TO PERSONS OR LOSS OR DAMAGE TO PROPERTY CAUSED BY the PRODUCT THAT ARE OPERATED OR USED IN APPLICATION NOT INTENDED OR EXCLUDED BY INSTRUCTIONS, PRECAUTIONS, OR WARNING CONTAINED IN MITSUBISHI'S USER, INSTRUCTION AND/OR SAFETY MANUALS, TECHNICAL BULLETINS AND GUIDELINES FOR the PRODUCT.
("Prohibited Application")
Prohibited Applications include, but not limited to, the use of the PRODUCT in;
- Nuclear Power Plants and any other power plants operated by Power companies, and/or any other cases in which the public could be affected if any problem or fault occurs in the PRODUCT.
- Railway companies or Public service purposes, and/or any other cases in which establishment of a special quality assurance system is required by the Purchaser or End User.
- Aircraft or Aerospace, Medical applications, Train equipment, transport equipment such as Elevator and Escalator, Incineration and Fuel devices, Vehicles, Manned transportation, Equipment for Recreation and Amusement, and Safety devices, handling of Nuclear or Hazardous Materials or Chemicals, Mining and Drilling, and/or other applications where there is a significant risk of injury to the public or property.

Notwithstanding the above, restrictions Mitsubishi may in its sole discretion, authorize use of the PRODUCT in one or more of the Prohibited Applications, provided that the usage of the PRODUCT is limited only for the specific applications agreed to by Mitsubishi and provided further that no special quality assurance or fail-safe, redundant or other safety features which exceed the general specifications of the PRODUCTs are required. For details, please contact the Mitsubishi representative in your region.

PRECAUTIONS FOR USE

(1) Interlink transfer and routing functions

CC-Link IE Field Network board cannot be used as a relay station for the interlink transfer function or the routing function.

To use these functions, set a network module as a relay station.

(2) Driver installation and updating

Do not install or update the driver other than the method written in the troubleshooting (☞ Page 166, CHAPTER 16) in this manual.

The consistency between the driver and utility cannot be identified, and CC-Link IE Field Network board may not operate properly.

INTRODUCTION

Thank you for purchasing Q80BD-J71GF11-T2, Q81BD-J71GF11-T2 CC-Link IE Field Network Interface Board.
This manual describes CC-Link IE Field Network and the system configuration, specifications, operating procedure, functions, and troubleshooting of the Interface Board.

Before using this product, please read this manual and the related manuals carefully and develop familiarity with the functions and performance of Q80BD-J71GF11-T2, Q81BD-J71GF11-T2 CC-Link IE Field Network Interface Board to handle the product correctly.
When applying the program examples introduced in this manual to the actual system, ensure the applicability and confirm that it will not cause system control problems.

Please make sure that the end users read this manual.

RELATED MANUALS

Manual name <Manual number (model code)>	Description
MELSEC-Q CC-Link IE Field Network Master/Local Module User's Manual <SH-080917ENG, 13JZ47>	Overview of the CC-Link IE Field Network, and specifications, procedures before operation, system configuration, installation, wiring, settings, functions, programming, and troubleshooting for MELSEC-Q series CC-Link IE Field Network master/local modules.
MELSEC-L CC-Link IE Field Network Master/Local Module User's Manual <SH-080972ENG, 13JZ54>	Overview of the CC-Link IE Field Network, and specifications, procedures before operation, system configuration, installation, wiring, settings, functions, programming, and troubleshooting for MELSEC-L series CC-Link IE Field Network master/local modules.
MELSEC-L CC-Link IE Field Network Head Module User's Manual <SH-080919ENG, 13JZ48>	Specifications, procedures before operation, system configuration, installation, wiring, settings, and troubleshooting for head module.
CC-Link IE Field Network Ethernet Adapter Module User's Manual <SH-080939ENG, 13JZ50>	Specifications, procedures before operation, system configuration, installation, wiring, settings, and troubleshooting for Ethernet adapter module.
MELSEC Data Link Library Reference Manual <SH-081035ENG, 13JV25>	Programming, function specifications, and sample programming for MELSEC data link library.

Remark

MELSEC Data Link Library Reference Manual is stored on the CD-ROM of the software package in a PDF file format. Manuals in printed form are sold separately for a single purchase. Order a manual by quoting the manual number (model code) listed in the above table.

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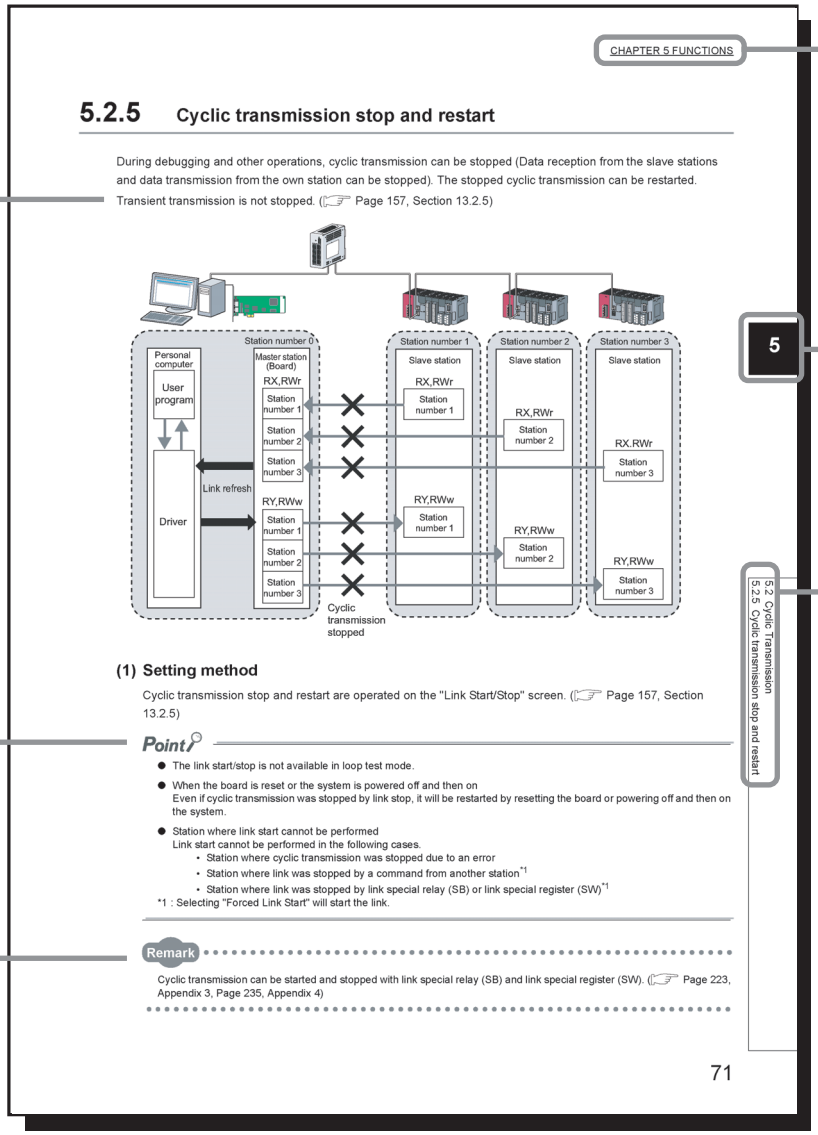
HOW TO USE THIS MANUAL

In this manual, pages are organized and the symbols are used as shown below.
The following page illustration is for explanation purpose only, and the content is different from the actual page.


CHAPTER 5 FUNCTIONS
5.2.5 Cyclic transmission stop and restart
During debugging and other operations, cyclic transmission can be stopped (Data reception from the slave stations and data transmission from the own station can be stopped). The stopped cyclic transmission can be restarted.
Transient transmission is not stopped. (☞ Page 157, Section 13.2.5)
Station number 0
Station number 1
Station number 2
Station number 3
Personal computer
User program
Driver
Master station (Board)
Slave station
RX,RWr
RY,RWw
Station number 1
Station number 2
Station number 3
Link refresh
Cyclic transmission stopped
(1) Setting method
Cyclic transmission stop and restart are operated on the "Link Start/Stop" screen. (☞ Page 157, Section 13.2.5)
Point
The link start/stop is not available in loop test mode.
When the board is reset or the system is powered off and then on
Even if cyclic transmission was stopped by link stop, it will be restarted by resetting the board or powering off and then on the system.
Station where link start cannot be performed
Link start cannot be performed in the following cases.
Station where cyclic transmission was stopped due to an error
Station where link was stopped by a command from another station*1
Station where link was stopped by link special relay (SB) or link special register (SW)*1
*1 : Selecting "Forced Link Start" will start the link.
Remark
Cyclic transmission can be started and stopped with link special relay (SB) and link special register (SW). (☞ Page 223, Appendix 3, Page 235, Appendix 4)
71
5
5.2 Cyclic Transmission
5.2.5 Cyclic transmission stop and restart

☞shows reference pages.

The chapter of the current page is shown.

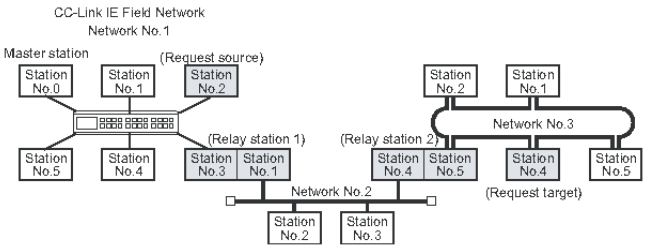
The section of the current page is shown.

Point shows notes that requires attention.

Remark shows useful information.

Ex. shows setting or operating examples.

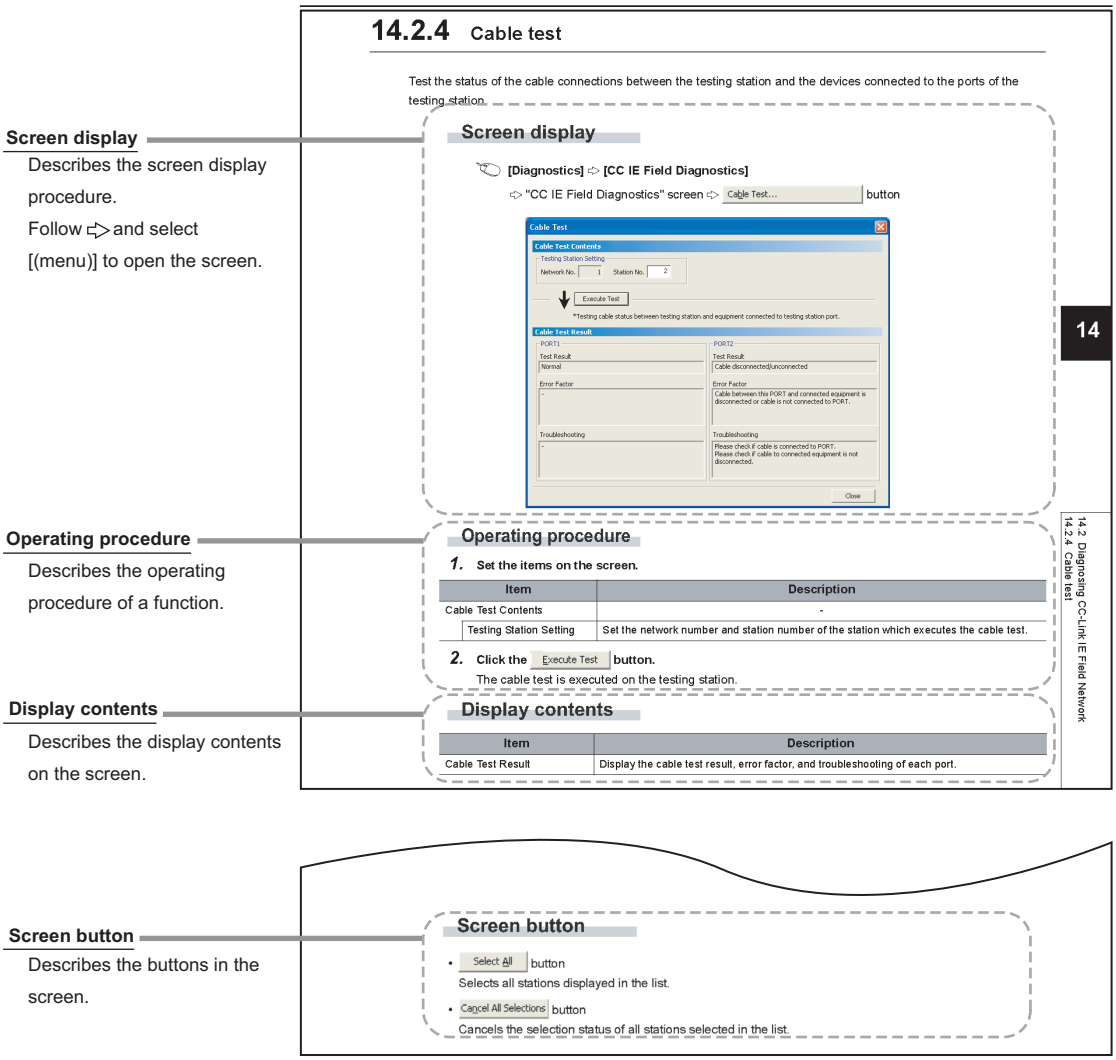
Ex. A setting to perform transient transmission from the station number 2 on the network number 1 to the station number 4 on the network number 3



For the accessible devices and ranges of CC-Link IE Field Network board, refer to the following manual.
MELSEC Datalink Library Programmer's Reference

shows reference pages.

Pages are organized as shown below to describe the utility functions.


Screen display
Describes the screen display procedure.
Follow ⇨ and select [(menu)] to open the screen.
Operating procedure
Describes the operating procedure of a function.
Display contents
Describes the display contents on the screen.
Screen button
Describes the buttons in the screen.
14.2.4 Cable test
Test the status of the cable connections between the testing station and the devices connected to the ports of the testing station.
Screen display
[Diagnostics] ⇨ [CC IE Field Diagnostics]
⇨ "CC IE Field Diagnostics" screen ⇨ Cable Test... button
Operating procedure
1. Set the items on the screen.
Item
Description
Cable Test Contents
-
Testing Station Setting
Set the network number and station number of the station which executes the cable test.
2. Click the Execute Test button.
The cable test is executed on the testing station.
Display contents
Item
Description
Cable Test Result
Display the cable test result, error factor, and troubleshooting of each port.
Screen button
Select All button
Selects all stations displayed in the list.
Cancel All Selections button
Cancels the selection status of all stations selected in the list.
14
14.2 Diagnosing CC-Link IE Field Network
14.2.4 Cable test

The following shows the symbols used in this manual with descriptions and examples.

Symbol	Description	Example
[ ]	Menu name on a menu bar	[Diagnostics]
<< >>	Tab name on a screen	<<Local Security Setting>>
" "	Item name on a screen	"CC IE Field Diagnostics"
	Button on a screen	Clear Refine Criteria... button
	Keyboard key	Ctrl

TERMS

This manual uses the following terms unless otherwise specified.

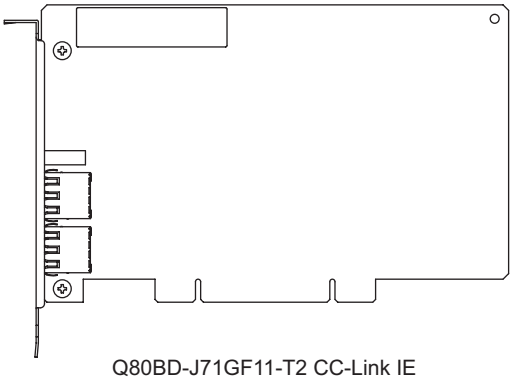
Term	Description
CC-Link IE Field Network board	Generic term for Q80BD-J71GF11-T2 and Q81BD-J71GF11-T2 CC-Link IE Field Network interface board
CC-Link IE Controller Network board	Generic term for Q80BD-J71GP21-SX, Q80BD-J71GP21S-SX, Q81BD-J71GP21-SX, and Q81BD-J71GP21S-SX CC-Link IE Controller Network interface board
CC-Link Ver.2 board	Generic term for Q80BD-J61BT11N and Q81BD-J61BT11 CC-Link system master/local interface board
MELSECNET/H board	Generic term for Q80BD-J71LP21-25,Q81BD-J71LP21-25,Q80BD-J71LP21S-25, Q80BD-J71LP21G, Q80BD-J71LP21GE and Q80BD-J71BR11 MELSECNET/H interface board
SW1DNC-CCIEF-B	Product name of the software package for CC-Link IE Field Network board
CC IE Field Utility	Name for the utility included in the SW1DNC-CCIEF-B CC-Link IE Field Network software package
GX Developer	General product name for SW8D5C-GPPW-E, SW8D5C-GPPW-EA, SW8D5C-GPPW-EV, SW8D5C-GPPW-EVA
GX Works2	General product name for SWnDNC-GXW2-E, SWnDNC-GXW2-EA("n" denotes the version number.)
CPU module	Generic term for the MELSEC-Q/L series CPU module
Master/local module	Generic term for the QJ71GF11-T2 and LJ71GF11-T2 CC-Link IE Field Network master/local module
Head module	Abbreviation for the LJ72GF15-T2 CC-Link IE Field Network head module
Ethernet adapter module	Abbreviation for the NZ2GF-ETB CC-Link IE Field Network Ethernet adapter module
Network module	Generic term for the following modules: • CC-Link IE Field Network module • CC-Link IE Controller Network module • MELSECNET/H module • MELSECNET/10 module
Intelligent function module	A MELSEC-L series module that has functions other than input or output, such as A/D converter module and D/A converter module
Master station	Station that controls the entire network. Cyclic and transient transmission can be performed with all stations. One master station is required per network.
Local station	Cyclic and transient transmission can be performed with the master station and other local stations. The local station controls modules such as a CPU module by its programs.
Remote I/O station	Station where cyclic transmission of bit-by-bit input/output signals is performed with the master station.
Remote device station	Station where cyclic transmission of bit-by-bit input/output signals and word-by-word input/output data is performed with the master station. Transient transmission can be also performed. The station returns a response to transient transmission (request) from other stations. The station also issues transient transmission (request) to other stations.
Intelligent device station	Station that handles bit and word data It can communicate with the master and local stations only, and not with other remote I/O stations, remote device stations, or intelligent device stations. Both cyclic and transient transmissions are available.
Slave station	Generic term for the stations other than the master station (local station, remote I/O station, remote device station, and intelligent device station)
Reserved station	Station that is not actually connected, but must be included in the total number of the stations on the network since it is to be connected in the future
Relay station	Station that comprises of a programmable controller and multiple network modules and that relays data link communication to another network
Cyclic transmission	A communication function by which data are periodically exchanged among stations on the same network, by using link devices (RX, RY, RWw, and RWr)
Transient transmission	A method for communication with another station, which is used when requested by a dedicated instruction or utility
Data link	Generic term for cyclic transmission and transient transmission
Routing	Process of selecting paths for communication with other networks For CC-Link IE Field Network, to communicate with stations on a different kind of network, configure communication paths with routing parameters in advance.
Dedicated instruction	Instruction that facilitates programming for the functions of the intelligent function modules
Reconnection	Operation that is performed to restart data link when a faulty station returns to normal
Disconnection	Operation that is performed to stop data link when a data link error occurs.

Term	Description
Loopback	Function that disconnects the station in which an error has occurred from the network and continues data link with the stations that are operating normally. Stations connected after the faulty station can also continue data link.
Device	One of various devices (X, Y, M, D, etc.) inside a CPU module
Link device	One of various devices (RX, RY, RWw, RWr, etc.) inside a module on CC-Link IE Field Network
Remote input (RX)	Bit data that is input from the slave station to the master station (with some exceptions for local stations)
Remote output (RY)	Bit data that is output from the master station to the slave station (with some exceptions for local stations)
Remote register (RWr)	16-bit data (word data) that is input from the slave station to the master station (with some exceptions for local stations)
Remote register (RWw)	16-bit data (word data) that is output from the master station to the slave station (with some exceptions for local stations)
Link special relay (SB)	Bit data that indicates the module or board operating status and data link status of CC-Link IE Field Network
Link special register (SW)	16-bit data (word data) that indicates the module or board operating status and data link status of CC-Link IE Field Network
Link scan time	Time required for the data sent by each station to rotate around the network The link scan time varies depending on the amount of data or transient transmission requests.
Link refresh	Data transfer between link devices of CC-Link IE Field Network board and the driver.
Baton pass	Passing of a token to send data on the network
Buffer memory	A memory which is used to store data for communication between the CC-Link IE Field Network board and the master/local module.
RAS	Abbreviation for Reliability, Availability, and Serviceability A generic term used to describe the easy use of automated equipment
MD function	Generic term for functions in MELSEC data link library
Board WDT	Abbreviation for the watchdog timer that monitors the operation of network board
Driver WDT	Abbreviation for the watchdog timer that monitors the communication status between a network board and a personal computer, or operating status of a personal computer

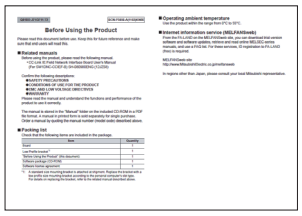
PACKING LIST

The following items are included in the package of this product. Before use, check that all the items are included.

Q80BD-J71GF11-T2

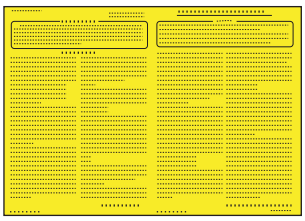


Q80BD-J71GF11-T2 CC-Link IE
Field Network Interface Board



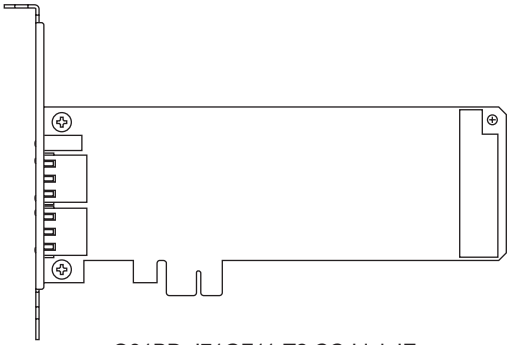
Before Using the Product

SW1DNC-CCIEF-B
CC-Link IE
Field Network
software package
(CD-ROM)

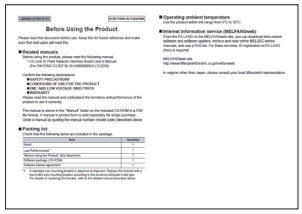


Software license agreement

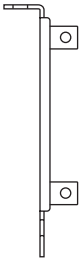
Q81BD-J71GF11-T2



Q81BD-J71GF11-T2 CC-Link IE
Field Network Interface Board

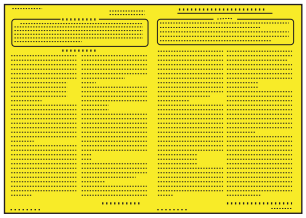


Before Using the Product



Low Profile Bracket

SW1DNC-CCIEF-B
CC-Link IE
Field Network
software package
(CD-ROM)



Software license agreement

CHAPTER 1 OVERVIEW

1.1 CC-Link IE Field Network

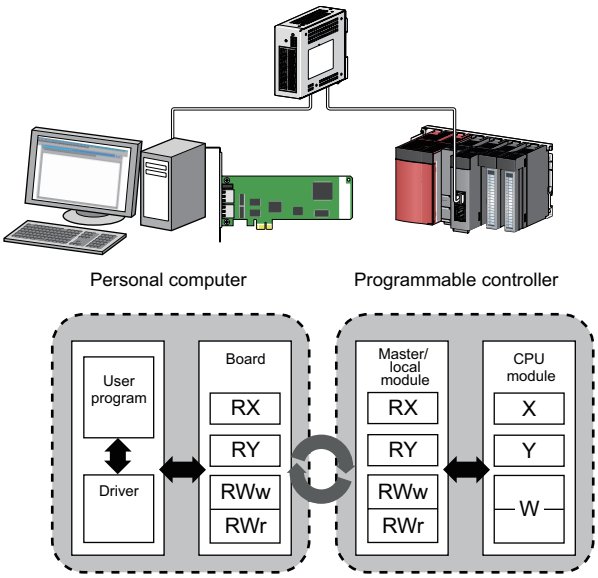
CC-Link IE Field Network is a high-speed and large-capacity open field network that is based on Ethernet technology (1000BASE-T).

(1) Data communication

High-speed and large-capacity data communication is available between a master station and slave stations on the CC-Link IE Field Network.

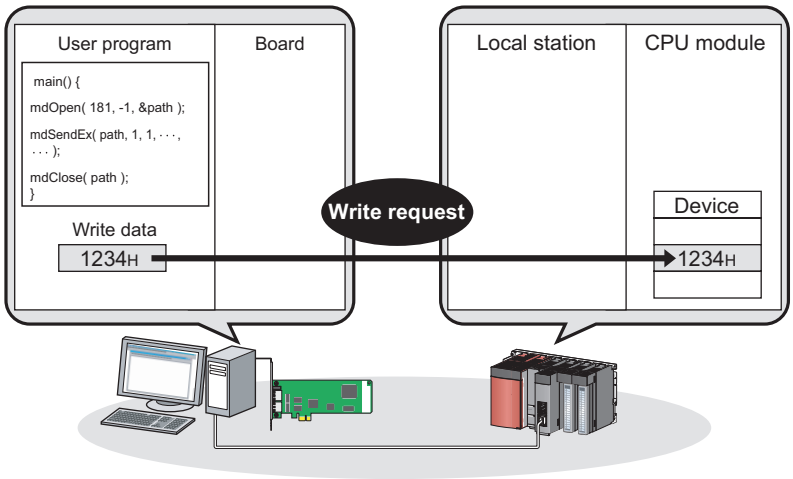
(a) Periodic communication (cyclic transmission)

Data is periodically communicated among stations within the same network. (☞ Page 65, Section 5.2)



(b) Non-periodic communication (transient transmission)

Data is communicated upon request. (☞ Page 73, Section 5.3)

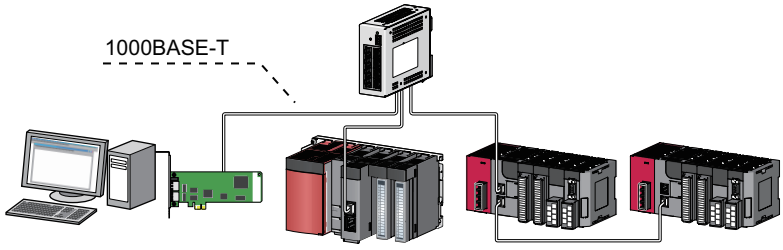


(2) 1Gbps communication speed

1Gbps communication speed allows high-speed communication. Also, the takt time can be reduced due to the improved performance of communication response.

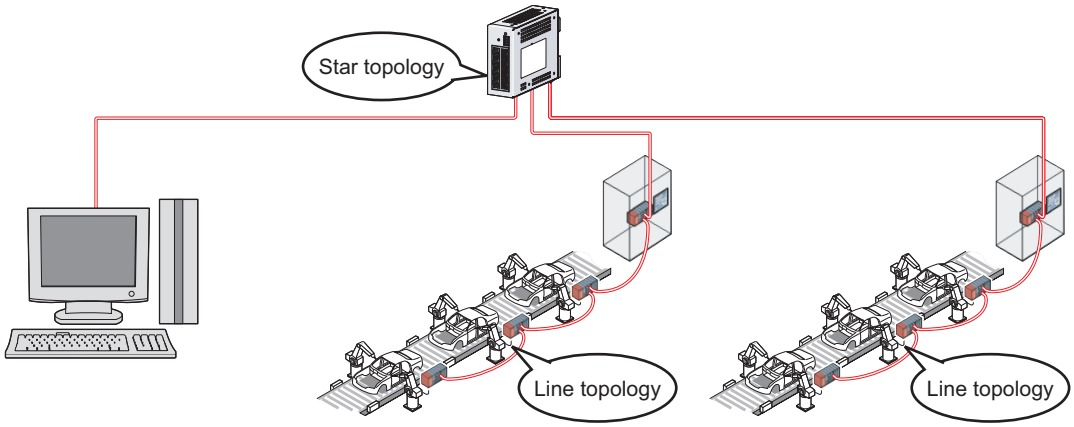
(3) Use of Ethernet cable

A 1000BASE-T-compliant Ethernet is used for the connection interface. The wiring cost can be reduced because 1000BASE-T-compliant Ethernet cables are commercially available. (☞ Page 33, Section 2.4.1)



(4) Flexible wiring for the system arrangements

The network can be wired into star topology, line topology, and ring topology. (☞ Page 26, Section 2.2 (2))
For star topology, a 1000BASE-T design switching hub can be used. (☞ Page 33, Section 2.4.2)
Wiring is highly flexible because a network can consist of a combination of star and line topologies. For example, the control panels can be connected through a star topology and the production lines through a line topology.

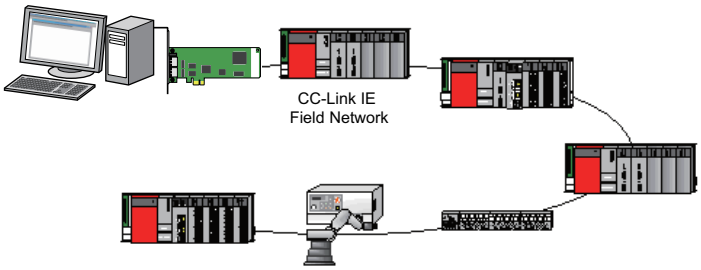


1.2 CC-Link IE Field Network Board

CC-Link IE Field Network board allows the connection of a personal computer to CC-Link IE Field Network.
CC-Link IE Field Network board can be used as either a master station or local stations of CC-Link IE Field Network.

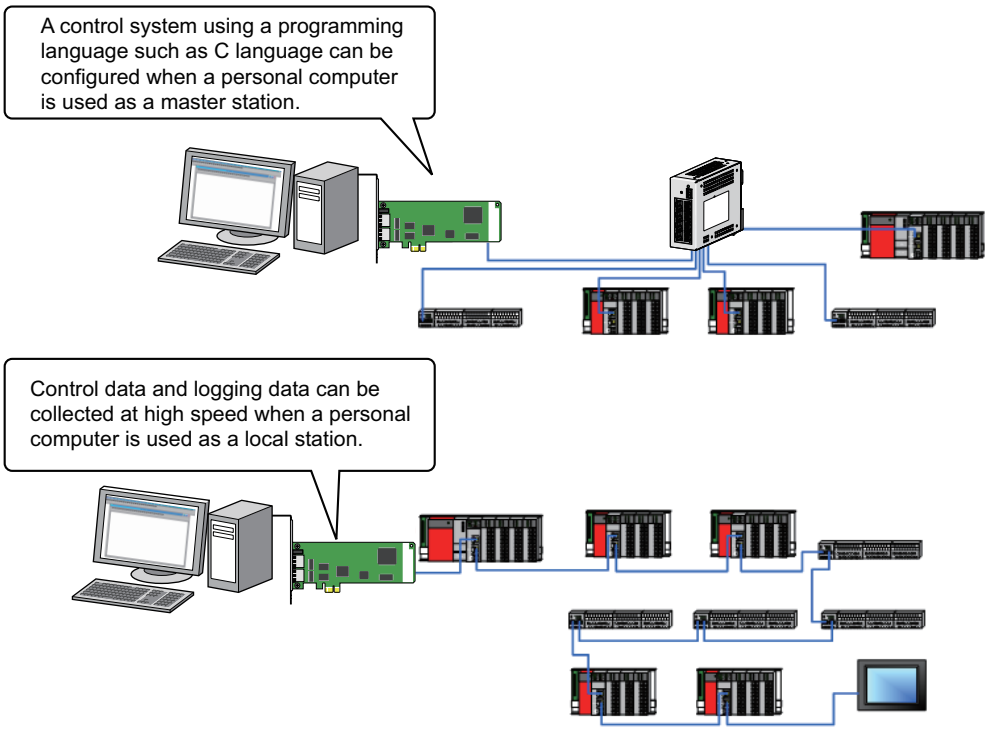
(1) A personal computer can be easily connected to CC-Link IE Field Network

A system which contains a personal computer as a master station or local stations of the CC-Link IE Field Network system can be configured.



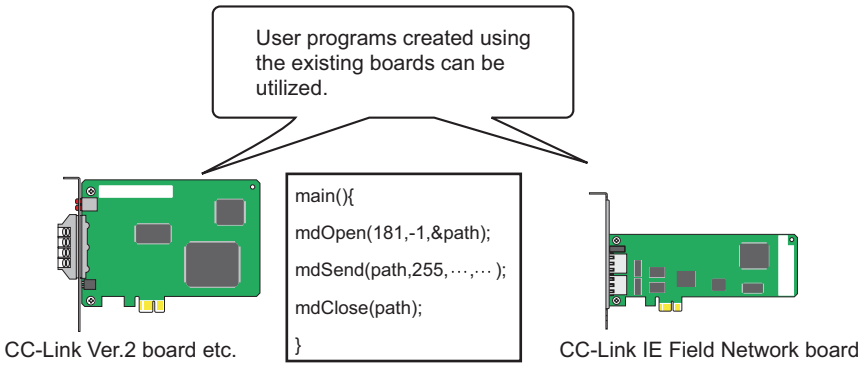
(2) System controls and high-speed data collection

For a reduction of takt time in a manufacturing system, control data, logging data of manufacturing processes, management data for traceability, and management/diagnostic data for equipment predictive maintenance can be collected at high speed and monitored.
A control system using a programming language such as C language can be configured when a personal computer is used as a master station.
Control data and logging data can be collected at high speed when a personal computer is used as a local station.


A control system using a programming language such as C language can be configured when a personal computer is used as a master station.
Control data and logging data can be collected at high speed when a personal computer is used as a local station.

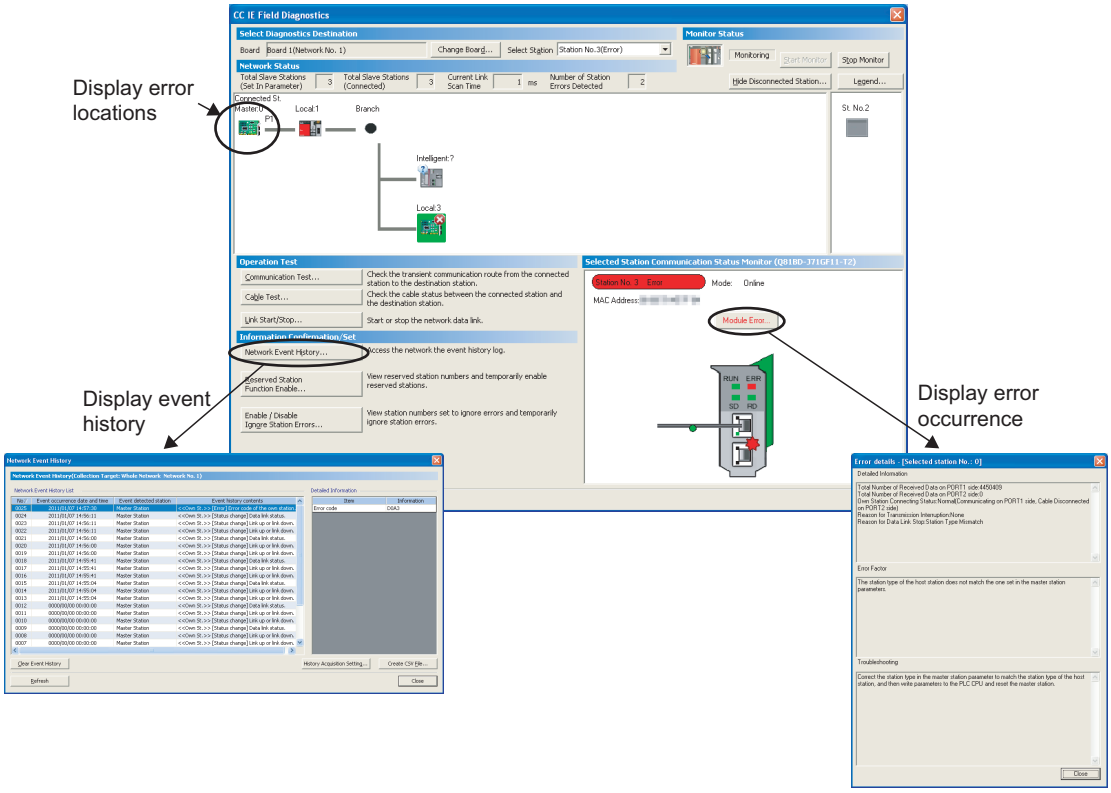
(3) User programs created using existing boards can be utilized

For user programs to use CC-Link IE Field Network board, the function-level compatibility can be maintained because the common interface (MELSEC data link functions) with the existing boards can be used.
Therefore, user programs created using the existing boards such as CC-Link IE Controller Network board, CC-Link Ver.2 board, MELSECNET/H board, can be utilized for CC-Link IE Field Network board.
Program creation time can be shortened since the users who previously used the existing boards do not need to create a new user program.



(4) Checking CC-Link IE Field Network status on the screen

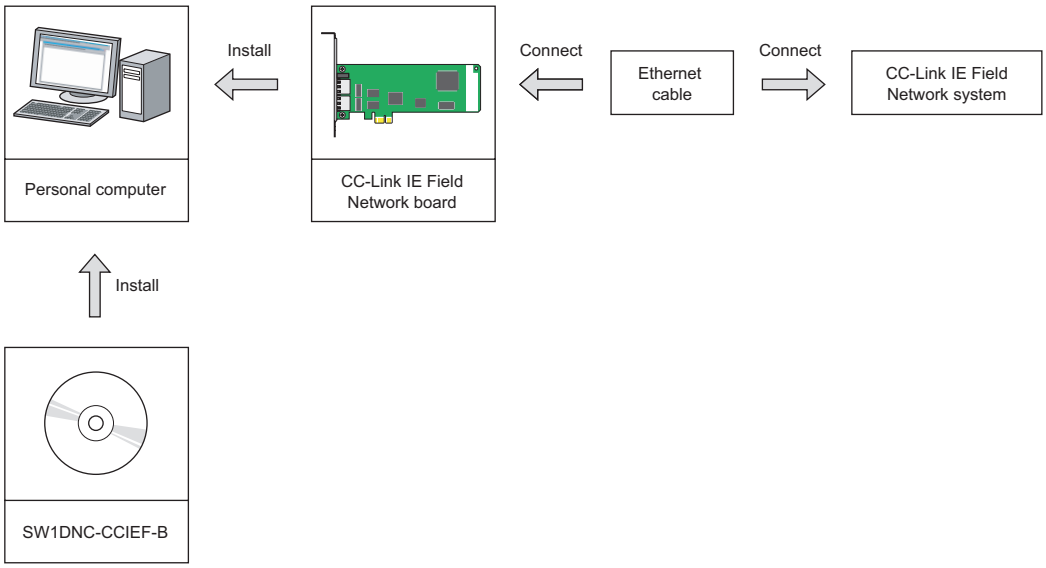
The status of CC-Link IE Field Network can be checked using CC IE Field Utility. Error locations, error causes, and event history are displayed on the screen. This helps to reduce the time for the system to recover from the error. (☞ Page 142, CHAPTER 13)



CHAPTER 2 SYSTEM CONFIGURATION

2.1 System Configuration Using CC-Link IE Field Network Board

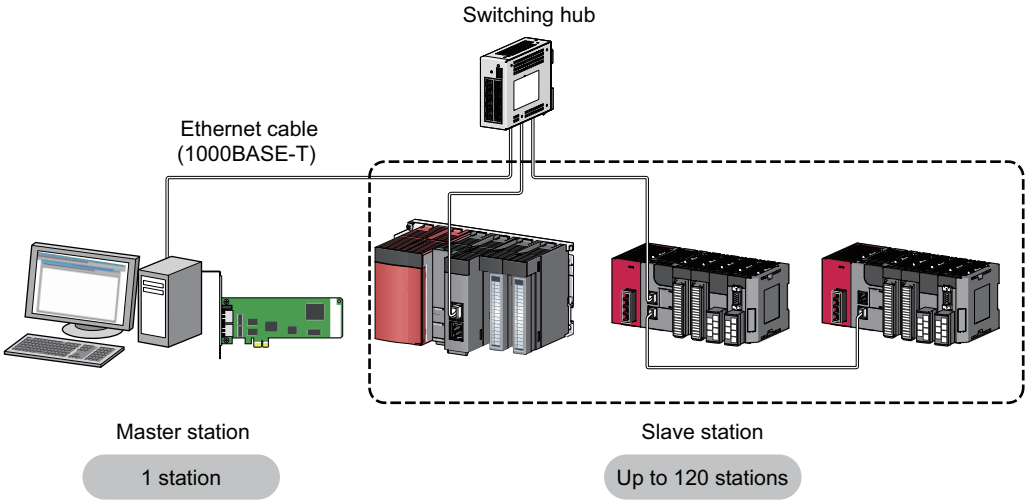
A system configuration when using the CC-Link IE Field Network board which is installed to a personal computer is shown below.



2.2 Single Network System

(1) Overall system configuration

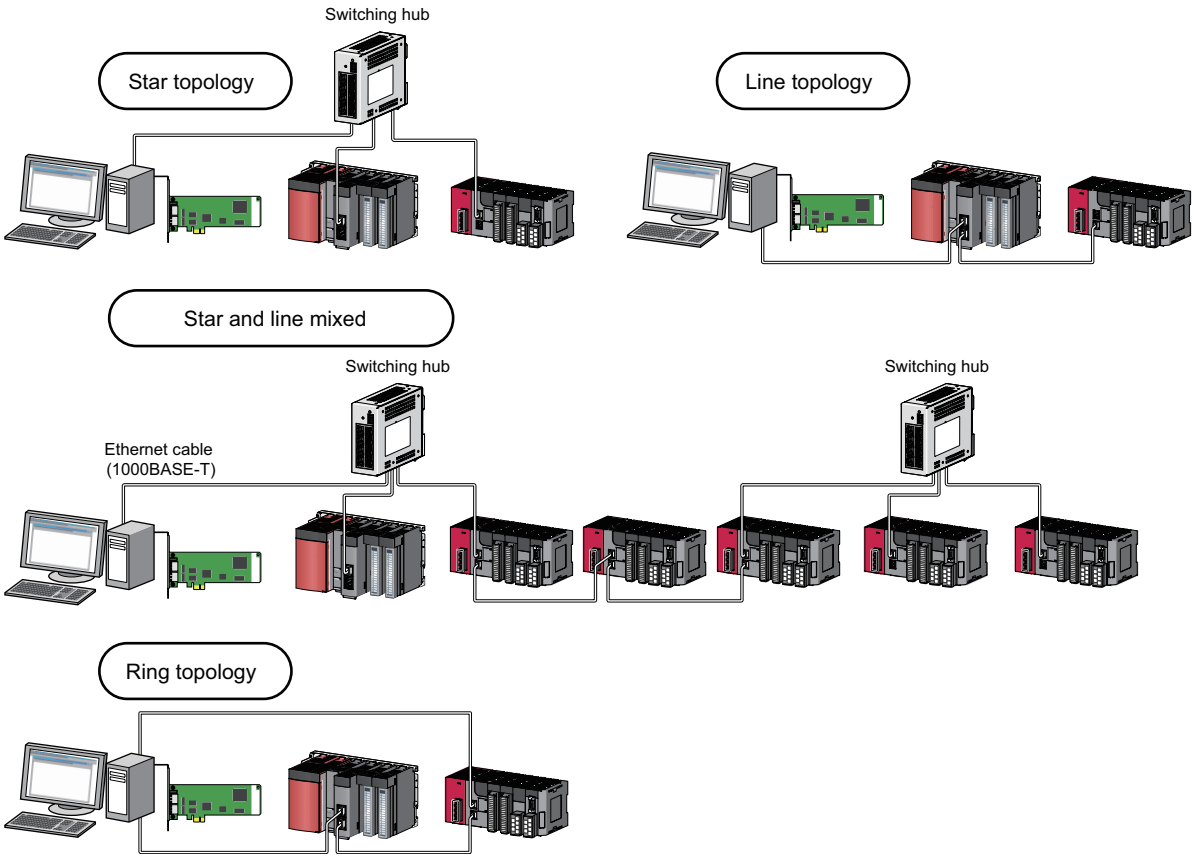
Single network system is a system that consists of a master station and slave stations connected by Ethernet cables as shown below. Up to 120 slave stations and 1 master station can be connected.



(2) Network configuration

The network can be wired into star topology, line topology, and ring topology.

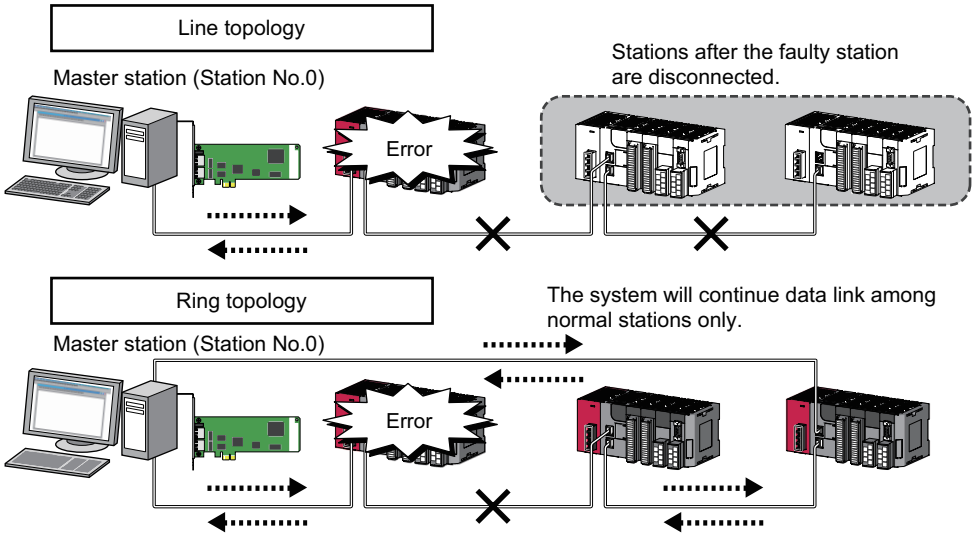
A network can consist of a combination of star and line topologies but cannot consist of a combination of ring topology and star or line topology.



Item	Description
Star topology	The network is formed into a star with a switching hub. Slave stations can be easily added by this topology. (Add slave stations one by one. If multiple slave stations are added at a time, all stations on the network are reconnected. Therefore, an error may momentarily occur in all the stations.)
Line topology	The connection between the board and modules using an Ethernet cable makes a line topology. For line topology, connections are available without using a switching hub.
Ring topology	The connection between the board and modules using an Ethernet cable makes a ring topology. Data link continues with the stations that are operating normally.

Point

Only the slave station in which an error has occurred is disconnected from the network. Data link continues with the stations that are operating normally.
In a line topology, all stations connected after the faulty station are disconnected. In ring topology, data link continues with the stations that are operating normally.



(3) Precautions

(a) Connecting devices to the same network

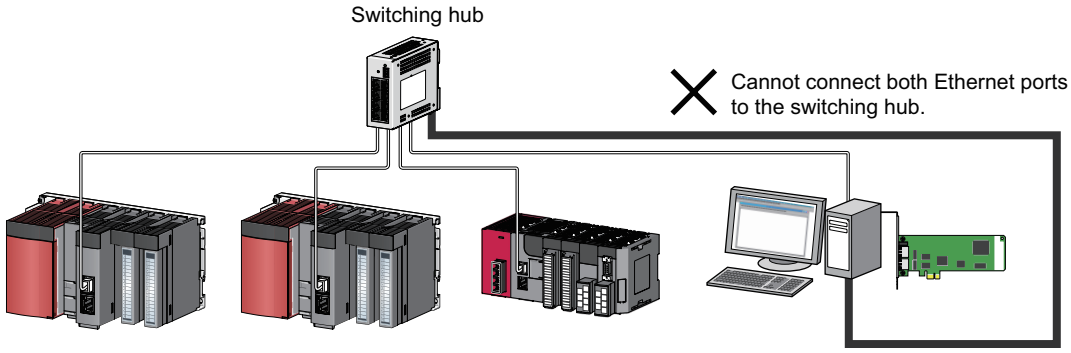
To a switching hub on CC-Link IE Field Network, do not connect an Ethernet device (e.g. personal computer) on a network other than CC-Link IE Field Network. Doing so will cause timeout in the master station, resulting in disconnection among all stations.

(b) Configuration in which data link cannot be performed (incorrect ring topology)

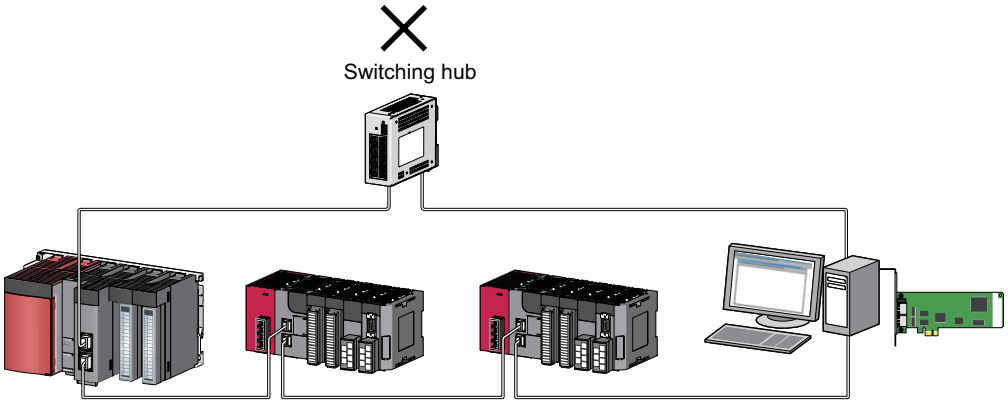
Point

Do not wire devices as shown below. Doing so will cause an error in all stations and data link cannot be performed.

- Connecting both PORT1 and PORT2 to the switching hub



- Ring topology through a switching hub



(c) Ring topology

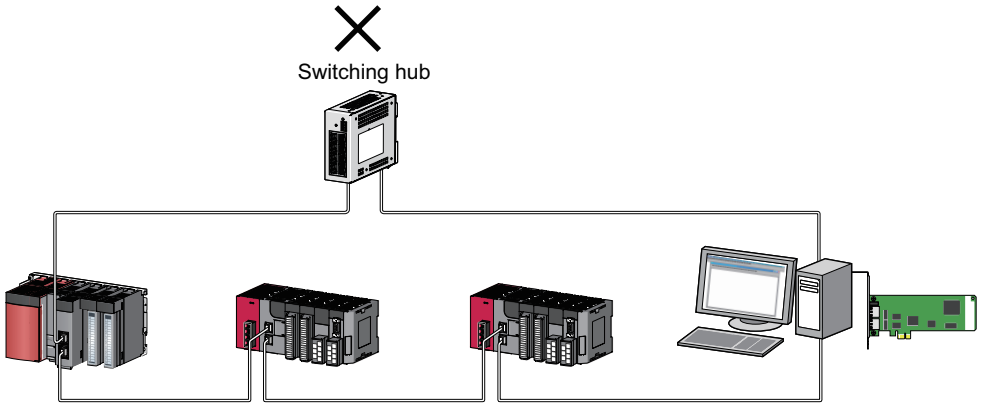
To configure a network in ring topology, set "Use" for "Loopback Function Setting" in the Network Parameter screen for the master station. (☞Page 114, Section 10.2.2 (1))

When a module is used for the master station, check if the module version supports the loopback function.

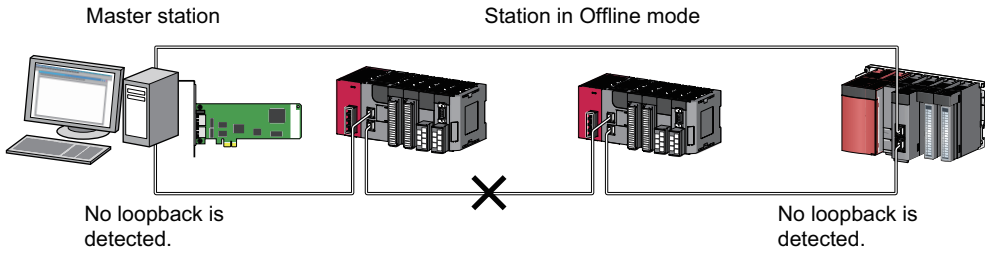
MELSEC-Q CC-Link IE Field Network Master/Local Module User's Manual

Point

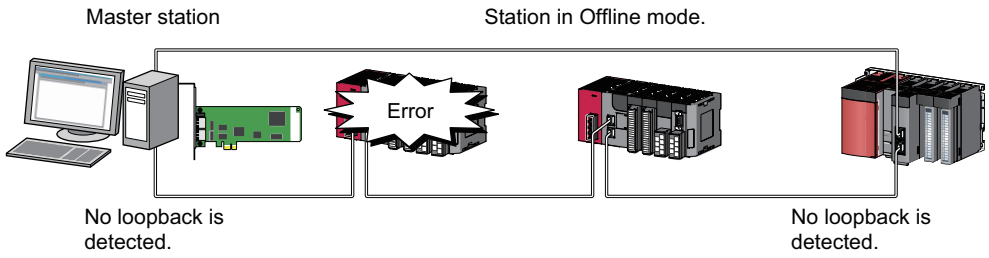
- Configuring a network in ring topology using a switching hub
  If a network is configured in ring topology through the two ports of the switching hub, the following problems may arise. Therefore, do not use a switching hub for ring topology.
  - Loopback cannot be detected if an Ethernet cable is disconnected.
  - If a station is disconnected due to failure or power-off, data link will stop.



- There is an offline mode station on a network configured in ring topology.
  In the following cases, the master station or the station connected to the offline mode station cannot detect loopback.
  - Either of the Ethernet cables connected to the offline mode station is disconnected.



  - A station connected to the offline mode station is disconnected.

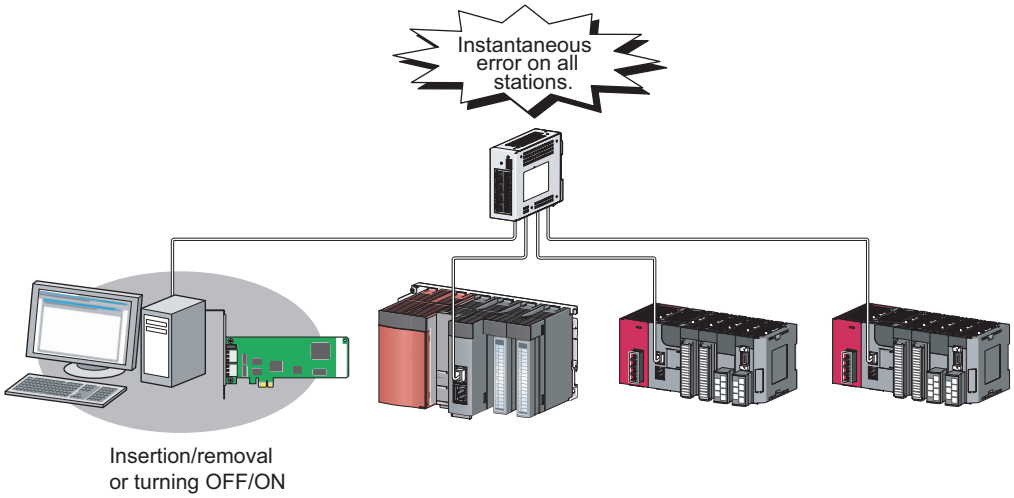


To detect loopback, set the offline mode station as a reserved station.
When the offline mode station is disconnected, loopback can be detected.

(d) Connecting/disconnecting a cable and turning off/on a device

When the following operations are performed, all stations on the network may be reconnected. Then, data link error may momentarily occur in all the stations and outputs of the connected slave stations may turn off.

Network Configuration	Operations
Star topology	• Turning off/on a system on a slave station or the switching hub • Connecting/disconnecting an Ethernet cable connected to the switching hub • Disconnecting an Ethernet cable from a slave station and connecting it to another slave station or the switching hub
Line topology, ring topology	• Simultaneously turning off/on systems on multiple stations • Simultaneously connecting/disconnecting Ethernet cables to/from multiple stations (When a data link error station returns, a data link error will occur in all the stations.)



For a measure to above error, set the network operation setting to maintain inputs from data link error station when outputs need to be maintained at an occurrence of a data link error.

Point

- Data link error in all stations when starting a personal computer
  Errors occur in all stations when a personal computer is started.
  This is because the line between P1 and P2 of CC-Link IE Field Network board is disconnected under the following conditions.
  - The power of the personal computer is turned OFF. (The line becomes in a conduction state when the power is turned ON.)
  - A reconnection is in progress when starting a board driver.

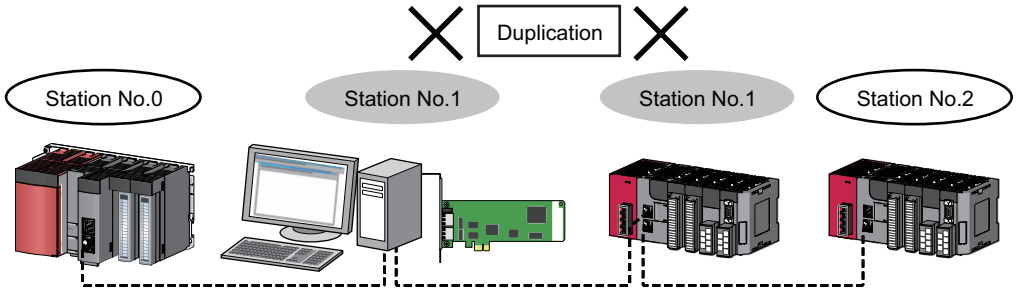
  As a result, the following reconnection which causes an error in all station occurs.
  - A reconnection of CC-Link IE Field Network board installed in a personal computer.
  - A reconnection of station which is located beyond the CC-Link IE Field Network board from the point of the master station.

  If multiple boards are installed in a single personal computer, this symptom occurs for the same number of times as the number of installed boards.

For a measure to above error, set the "Network Operation Setting" to maintain inputs from data link error station when outputs need to be maintained at an occurrence of a data link error.(Page 116, Section 10.2.3)

(e) Connected station numbers

Connected station numbers should not be duplicated. Data link may be stopped when the station number is duplicated.



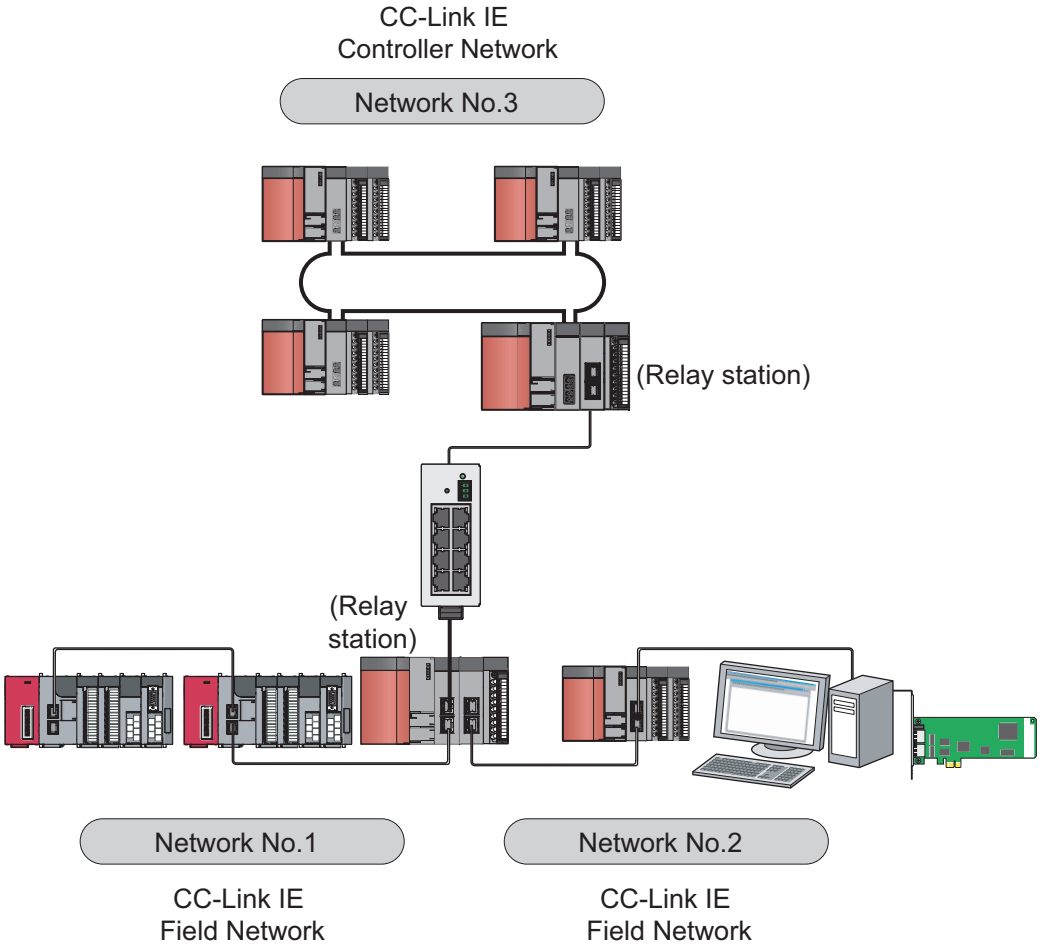
(Data link may stop.)

(f) Turn-on order

To avoid incorrect input from slave stations, turn on slave stations first and then the master station.

2.3 Multi-Network System

The multi-network system is a system in which multiple networks are connected by some relay stations. Up to 239 networks can be connected.



Point

Cyclic transmission is available only in the same network.
Transient transmission is available with other networks as well as the same network. Communications can be made with stations on up to the eighth network (the number of relay stations: 7).
(Page 74, Section 5.3.2)

2.4 Network Components

The CC-Link IE Field Network consists of the following.

2.4.1 Cables

For wiring, use the 1000BASE-T-compliant Ethernet cables.

Ethernet cable	Connector	Type
Category 5e or more (Double shielded/STP) Straight cable	RJ45 connector	The following conditioning cables: • IEEE802.3 (1000BASE-T) • ANSI/TIA/EIA-568-B (Category 5e)

Point

- For CC-Link IE Field Network wiring, use the recommended wiring components by CC-Link Partner Association.
- Cables for CC-Link IE Controller Network cannot be used for CC-Link IE Field Network.

(1) Product

Cables for CC-Link IE Field Network are available from Mitsubishi Electric System & Service Co., Ltd. (Catalogs for cable are also available.)

Also, the connector processing of cable length is available for your preference. Please consult your local Mitsubishi Electric System & Service Co., Ltd.

Type	Model (manufacturer)
CC-Link IE Field Network cable	SC-E5EW series (Mitsubishi Electric System & Service Co., Ltd.)

Remark

- Cable types
  The following cable types are available depending on the operating environment.
  - Standard type: Cables for inside the control panel and indoor connection
  - L type: Cables for outdoor connection

  Cables and relay adapters of flame retardant or waterproof type are also available. Please contact your Mitsubishi Electric System & Service Co., Ltd.

2.4.2 Hubs

Use hubs that meet the conditions listed below. Operation is not guaranteed if the hubs do not meet these conditions.

- Compliance with the IEEE802.3 (1000BASE-T)
- Support of the auto MDI/MDI-X function
- Support of the auto-negotiation function
- Switching hub (layer 2 switch) *1

*1 : A repeater hub is not available.

(1) Mitsubishi product

Type	Model name
Industrial switching hub	NZ2EHG-T8

2.5 Operating Environment

The following table shows the operating environment for the CC-Link IE Field Network board.

Item		Description
Personal computer		Windows® supported personal computer
	CPU	System requirements of the operating system must be met.
	Required memory	
	PCI bus specifications	For Q80BD-J71GF11-T2 • Compliant with PCI standard Rev.2.2 (3.3VDC/5VDC, 32-bit bus, 33MHz frequency)
	PCI Express® bus specifications	For Q81BD-J71GF11-T2 • Compliant with PCI Express® bus standard 1.1 (3.3VDC, maximum data bandwidth of 250MB/s, 100MHz frequency)
Operating system (English version)*1 *2		Microsoft® Windows XP® Professional Operating System, Service Pack 3 or later Microsoft® Windows XP® Home Edition Operating System, Service Pack 3 or later Microsoft® Windows Server® 2003 R2, Standard Edition Operating System, Service Pack 2 or later Microsoft® Windows Server® 2003 R2, Enterprise Edition Operating System, Service Pack 2 or later Microsoft® Windows Server® 2003 R2, Standard x64 Edition Operating System, Service Pack 2 or later Microsoft® Windows Server® 2003 R2, Enterprise x64 Edition Operating System, Service Pack 2 or later Microsoft® Windows Vista® Home Basic Operating System, Service Pack 2 or later Microsoft® Windows Vista® Home Premium Operating System, Service Pack 2 or later Microsoft® Windows Vista® Business Operating System, Service Pack 2 or later Microsoft® Windows Vista® Ultimate Operating System, Service Pack 2 or later Microsoft® Windows Vista® Enterprise Operating System, Service Pack 2 or later Microsoft® Windows Server® 2008 Standard Operating System, Service Pack 2 or later Microsoft® Windows Server® 2008 Enterprise Operating System, Service Pack 2 or later Microsoft® Windows Server® 2008 Standard x64 Edition Operating System, Service Pack 2 or later Microsoft® Windows Server® 2008 Enterprise x64 Edition Operating System, Service Pack 2 or later Microsoft® Windows Server® 2008 R2, Standard Operating System Microsoft® Windows Server® 2008 R2, Enterprise Operating System Microsoft® Windows® 7 Home Premium (32-bit version / 64-bit version) Operating System Microsoft® Windows® 7 Professional (32-bit version / 64-bit version) Operating System Microsoft® Windows® 7 Ultimate (32-bit version / 64-bit version) Operating System Microsoft® Windows® 7 Enterprise (32-bit version / 64-bit version) Operating System Microsoft® Windows Server® 2012 Standard Operating System Microsoft® Windows® 8 (32-bit version / 64-bit version) Operating System Microsoft® Windows® 8 Pro (32-bit version / 64-bit version) Operating System Microsoft® Windows® 8 Enterprise (32-bit version / 64-bit version) Operating System
Monitor		Resolution: 1024 × 768 dots or higher
Hard disk space		1GB or more
Disk drive		CD-ROM disk drive

Item	Description
Programming language (English version)*2	Microsoft® Visual Studio® .NET 2003 Visual Basic® *3
	Microsoft® Visual Studio® 2005 Visual Basic® *3
	Microsoft® Visual Studio® 2008 Visual Basic® *3
	Microsoft® Visual Studio® 2010 Visual Basic®
	Microsoft® Visual Studio® 2012 Visual Basic®
	Microsoft® Visual Studio® .NET 2003 Visual C++®
	Microsoft® Visual Studio® 2005 Visual C++®
	Microsoft® Visual Studio® 2008 Visual C++®
	Microsoft® Visual Studio® 2010 Visual C++®
	Microsoft® Visual Studio® 2012 Visual C++®

*1 : Windows® XP (64-bit version) and Windows Vista® (64-bit version) are not supported.

*2 : For a combination of the operation system and the programming language, refer to the Microsoft® Knowledge Base.

*3 : 64-bit version user programs cannot be created using MELSEC data link library. Use Visual Studio® 2010 or later.

(1) Instructions for personal computer

(a) PCI standard

When a personal computer which is not compliant with the PCI or PCI Express® standard is used, troubles caused by failures such as a contact failure or operation error may occur. This board may not operate when a PCI Express® slot for graphics is used.

For details of the number of boards that can be installed, installation slots, and occupied slots, refer to ☞Page 39, Section 3.2.

(2) Instructions for operating system

(a) Supported version of SW1DNC-CCIEF-B

Operating system	Supported version	
	Q80BD-J71GF11-T2	Q81BD-J71GF11-T2
Windows XP® (32-bit version)	Version 1.05F or later	All versions
Windows Vista® (32-bit version)		
Windows Server® 2003 R2 (32-bit version)		
Windows Server® 2003 R2 (64-bit version)		Version 1.02C or later
Windows Server® 2008 (32-bit version)		All versions
Windows Server® 2008 (64-bit version)		Version 1.02C or later
Windows Server® 2008 R2		
Windows® 7 (64-bit version)		
Windows Server® 2012		Version 1.04E or later
Windows® 8		

(b) User authority

Log on as a user having administrator authority.

- Installation and uninstallation are available only by the administrator's authority.
- The Usage of utilities is available only by the administrator's authority.

(c) .NET Framework 3.5

When using one of the following operating system, .NET Framework 3.5 is required.

- Windows Server® 2012
- Windows® 8

Enable the .NET Framework 3.5 (including .NET 2.0 or 3.0) in "Turn Windows features on or off" on the control panel.

(d) The functions cannot be used

The following functions of operating system cannot be used. If an attempt is made to use any of the following functions, this product may not operate normally.

- Activating the application with Windows® compatible mode.
- Simplified user switch-over
- Remote desktop
- Large font size (Advanced setting of screen property)
- DPI setting other than 100% (set the size of text and illustration other than [smaller-100%])
- Power save mode (Standby, Hibernate, Sleep)
- Fast startup
- The language switching function set by Regional and Language Options
- Windows XP Mode
- Windows Touch or Touch
- Modern UI
- Client Hyper-V
- Server Core Installation

Remark

- When exiting the operating system, always shut down the computer.
- The behavior of the board and the personal computer when the personal computer enters the power save mode differs according to the operating system.
  For details of error codes and messages when the power save mode set by a user or a program is entered, refer to the following appendix.
  ☞Page 274, Appendix 14

(3) Instructions for user program

(a) Supported version of SW1DNC-CCIEF-B

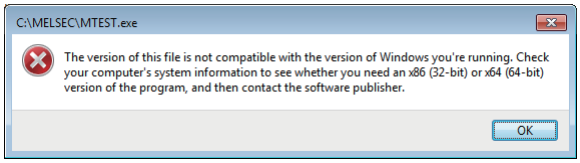
User program	Supported version
32-bit version user program*1	All versions
64-bit version user program*2	Version 1.02C or later

*1 : Programs can be created and executed on the 64-bit version operating system.

*2 : Programs can be created on the 32-bit version operating system, however, the following screen appears and cannot be executed.

<When using Windows® XP (32-bit version)>

<When using Windows® 7 (32-bit version)>


C:\MELSEC\MTEST.exe
The version of this file is not compatible with the version of Windows you're running. Check your computer's system information to see whether you need an x86 (32-bit) or x64 (64-bit) version of the program, and then contact the software publisher.
OK

(b) Language environment

- User programs created in the Japanese environment work only in the Japanese environment.
- User programs created in the English environment work only in the English environment.

(c) MELSEC data link library

For precautions when using MELSEC data link library, refer to the following manual.

MELSEC Data Link Library Reference Manual

CHAPTER 3 SPECIFICATIONS

This chapter explains general and performance specifications of CC-Link IE Field Network board.

3.1 General Specifications

General specifications of CC-Link IE Field Network board are shown below.

<table>
<tr><th>Item</th><th colspan="5">Specification</th></tr>
<tr><td>Operating ambient temperature</td><td colspan="5">0 to 55 °C</td></tr>
<tr><td>Storage ambient temperature</td><td colspan="5">-25 to 75 °C</td></tr>
<tr><td>Operating ambient humidity</td><td colspan="5" rowspan="2">5 to 95% RH, non-condensing</td></tr>
<tr><td>Storage ambient humidity</td></tr>
<tr><td rowspan="8">Vibration resistance</td><td rowspan="8">Compliant with JIS B 3502 and IEC 61131-2</td><td colspan="4">Under intermittent vibration</td></tr>
<tr><td>Frequency</td><td>Constant acceleration</td><td>Half amplitude</td><td>Sweep count</td></tr>
<tr><td>5 to 8.4 Hz</td><td>-</td><td>3.5mm</td><td rowspan="2">10 times each in X, Y, Z directions</td></tr>
<tr><td>8.4 to 150 Hz</td><td>9.8 m/s^2</td><td>-</td></tr>
<tr><td colspan="4">Under continuous vibration</td></tr>
<tr><td>Frequency</td><td>Constant acceleration</td><td>Half amplitude</td><td>Sweep count</td></tr>
<tr><td>5 to 8.4 Hz</td><td>-</td><td>1.75mm</td><td rowspan="2">-</td></tr>
<tr><td>8.4 to 150 Hz</td><td>4.9 m/s^2</td><td>-</td></tr>
<tr><td>Shock resistance</td><td colspan="5">Compliant with JIS B 3502 and IEC 61131-2 (147 m/s^2, 3 times each in X,Y,Z directions)</td></tr>
<tr><td>Operating atomosphere</td><td colspan="5">No corrosive gases</td></tr>
<tr><td>Operating altitude*1</td><td colspan="5">0 to 2000 m</td></tr>
<tr><td>Installation location</td><td colspan="5">Inside a control panel</td></tr>
<tr><td>Overvoltage category *2</td><td colspan="5">II or less</td></tr>
<tr><td>Pollution degree*3</td><td colspan="5">2 or less</td></tr>
</table>

*1 : Do not use or store the board under the environment where the atmospheric pressure is higher than the one at the altitude of 0 m. Doing so may cause a malfunction.

*2 : This indicates the section of the power supply to which the equipment is assumed to be connected between the public electrical power distribution network and the machinery within premises. Category II applies to equipment for which electrical power is supplied from fixed facilities.
The surge voltage withstand level for up to the rated voltage of 300V is 2500V.

*3 : This index indicates the degree to which conductive material is generated in terms of the environment in which the equipment is used.
Pollution degree 2 is when only non-conductive pollution occurs. A temporary conductivity caused by condensing must be expected occasionally.

Remark

The general specifications both CC-Link IE Field Network board and a personal computer must be satisfied after installation.

3.2 Performance Specifications

Performance specifications of the CC-Link IE Field Network board are shown below.

Item			Specification
Maximum link points per network		RX	16384 points, 2KB
		RY	16384 points, 2KB
		RWr	8192 points, 16KB
		RWw	8192 points, 16KB
Maximum link points per station	Master station	RX	16384 points, 2KB
		RY	16384 points, 2KB
		RWr	8192 points, 16KB
		RWw	8192 points, 16KB
	Local station*1	RX	2048 points, 256 bytes
		RY	2048 points, 256 bytes
		RWr	1024points, 2048 bytes*2
		RWw	1024 points, 2048 bytes*2
Communication speed			1Gbps
Connection cable			An Ethernet cable that meets the 1000BASE-T standard: Category 5e or higher (double shielded, STP), straight cable (☞ Page 33, Section 2.4.1)
Maximum station-to-station distance			100m max. (Compliant with ANSI/TIA/EIA-568-B (Category 5e)) (☞ Page 54, Section 4.6.1 (3))
Overall cable distance			Line topology: 12000m (when connected to 1 master station and 120 slave stations) Star topology: Depends on the system configuration Ring topology: 12100m (when connected to 1 master station and 120 slave stations)
Number of cascade connections			Up to 20
Network topology			Line topology, star topology (coexistence of both line topology and star topology is possible), ring topology
Number of connectable stations per network	Master station		1 station (up to 120 slave stations can be connected to master station)
	Local station		120 stations
Maximum number of networks			239
Communication method			Token passing method

*1 : This indicates the point which can be assigned for one station by master station. For local station, the data from other station can be received other than the point written in the table.

*2 : For "Online (High-speed mode)", 256 points and 512 bytes. (☞ Page 111, Section 10.2.1)

Item	Specification	
	Q80BD-J71GF11-T2	Q81BD-J71GF11-T2
Number of boards that can be installed	Up to 4	
Installation slot	PCI bus slot or PCI-X slot (Half size)	PCI Express® X1, X4, X8, X16 slot (Standard/low profile, half size)
Occupied slots	1 slot	1 slot
Internal current consumption	1.10A (5VDC)	1.68A (3.3VDC)
Weight	0.11kg	Standard size: 0.08kg Low profile size : 0.07kg

3.3 List of Buffer Memory Addresses

The buffer memory is used for exchanging data between the CC-Link IE Field Network board and the master/local module.
The content of the buffer memory returns to the default (initial values) when the power is turned off or the CC-Link IE Field Network board is reset.

Address (Decimal (Hexadecimal))	Name		Initial value	Read, write	Refer to
0 to 1023 (0 to 3FFH)	Link device area	Remote input (RX)	0	Read	Page 218, Appendix 2.1
1024 to 2047 (400H to 7FFH)		Remote output (RY)		Read, write	
2048 to 10239 (800H to 27FFH)		Remote register (RWw)			
10240 to 18431 (2800H to 47FFH)		Remote register (RWr)		Read	
18432 to 18463 (4800H to 481FH)		Link special relay (SB)		• 18432 to 18433 for read and write • 18434 to 18463 for read only	
18464 to 18975 (4820H to 4A1FH)		Link special register (SW)		• 18464 to 18495 for read and write • 18496 to 18975 for read only	
18976 to 19455 (4A20H to 4BFFH)	System area				-
19456 (4C00H)	RX offset/size information	Station No.1 RX offset	0	Read	Page 220, Appendix 2.2(1)
19457 (4C01H)		Station No.1 RX size			
to		to			
19694 (4CEEH)		Station No.120 RX offset			
19695 (4CEFH)		Station No.120 RX size			
19696 to 19711 (4CF0H to 4CFFH)	System area				-
19712 (4D00H)	RY offset/size information	Station No.1 RY offset	0	Read	Page 220, Appendix 2.2(2)
19713 (4D01H)		Station No.1 RY size			
to		to			
19950 (4DEEH)		Station No.120 RY offset			
19951 (4DEFH)		Station No.120 RY size			
19952 to 19967 (4DF0H to 4DFFH)	System area				-

Address (Decimal (Hexadecimal))	Name		Initial value	Read, write	Refer to
19968 (4E00H)	RWw offset/size information	Station No.1 RWw offset	0	Read	Page 221, Appendix 2.2(3)
19969 (4E01H)		Station No.1 RWw size			
to		to			
20206 (4EEEH)		Station No.120 RWw offset			
20207 (4EEFH)		Station No.120 RWw size			
20208 to 20223 (4EF0H to 4EFFH)	System area				-
20224 (4F00H)	RWr offset/size information	Station No.1 RWr offset	0	Read	Page 221, Appendix 2.2(4)
20225 (4F01H)		Station No.1 RWr size			
to		to			
20462 (4FEEH)		Station No.120 RWr offset			
20463 (4FEFH)		Station No.120 RWr size			
20464 to 20511 (4FF0H to 501FH)	System area				-
20512 (5020H)	Own station (network card information)	Manufacturer code	0	Read	Page 222, Appendix 2.3
20513 (5021H)		Model type			
20514 (5022H)		Model code	1		
20515 (5023H)		Version			
20516 to 20519 (5024H to 5027H)	System area				-
20520 (5028H)	Own station (controller information)	Controller information valid/ invalid flag	0	Read, write	Page 222, Appendix 2.3
20521 (5029H)		Manufacturer code			
20522 (502AH)		Model type			
20523 (502BH)		Model code			
20524 (502CH)		Version			
20525 to 20534 (502DH to 5036H)		Model name string			
20535 to 20536 (5037H to 5038H)		Vendor-specific device information			
20537 to 20538 (5039H to 503AH)	System area				-

Address (Decimal (Hexadecimal))	Name		Initial value	Read, write	Refer to
20544 (5040H)	Other station (station No.1) (network card information)	Manufacturer code	0	Read	Page 223, Appendix 2.4
20545 (5041H)		Model type			
20546 (5042H)		Model code			
20547 (5043H)		Version			
20548 to 20551 (5044H to 5047H)		System area			-
20552 (5048H)	Other station (station No.1) (controller information)	Controller information valid/ invalid flag	0	Read	Page 223, Appendix 2.4
20553 (5049H)		Manufacturer code			
20554 (504AH)		Model type			
20555 (504BH)		Model code			
20556 (504CH)		Version			
20557 to 20566 (504DH to 5056H)		Model name string			
20567 to 20568 (5057H to 5058H)		Vendor-specific device information			
20569 to 20575 (5059H to 505FH)		System area			-
20576 to 24383 (5060H to 5F3FH)	Other station information (station No.2 to No.120)	Same as other station information (station No.1)			-
24384 to 32767 (5F40H to 7FFFH)	System area				-

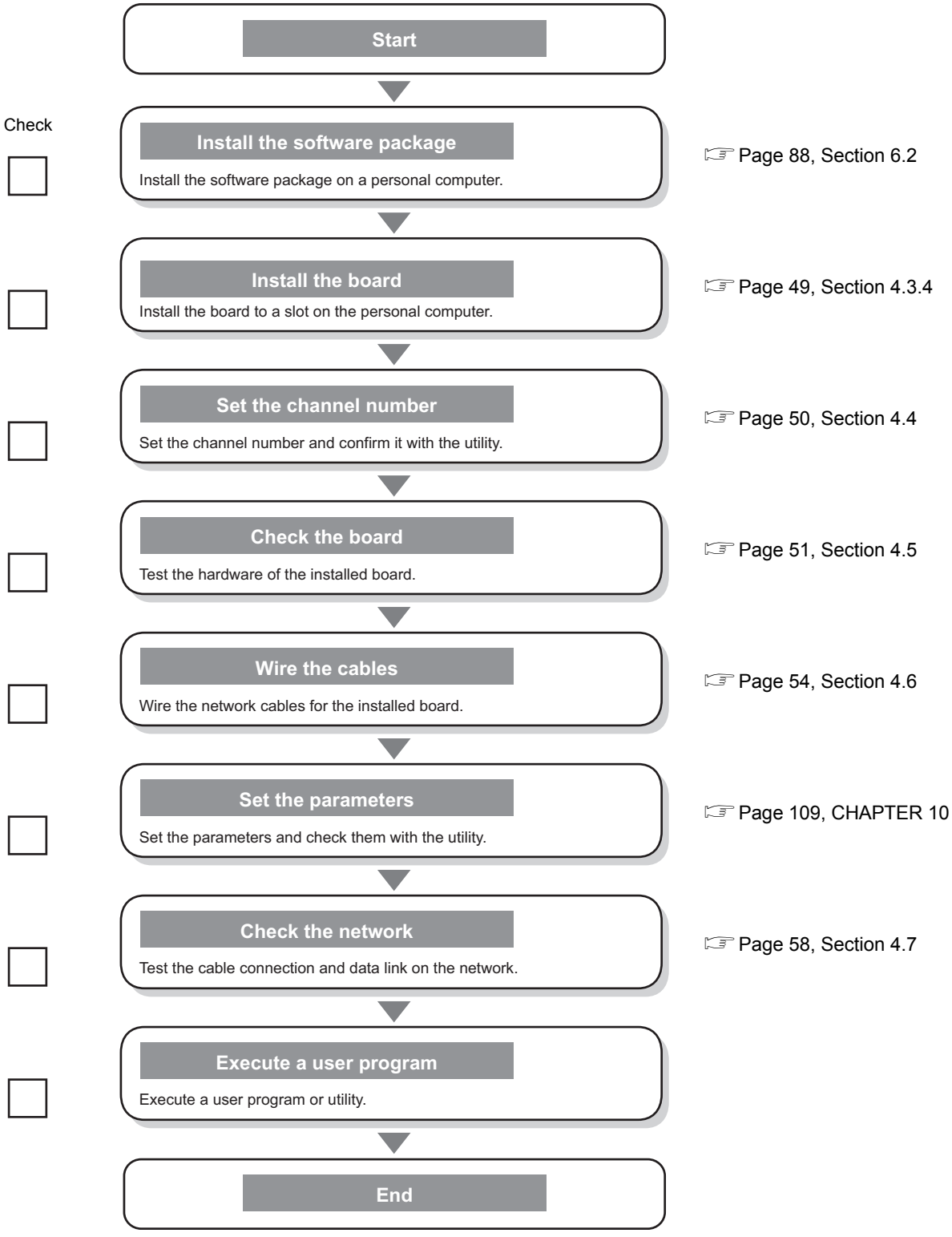
Point

Do not write data to "System area".
Doing so may cause malfunction of the programmable controller system.

CHAPTER 4 PROCEDURE BEFORE OPERATION

4.1 Procedure Before Operation

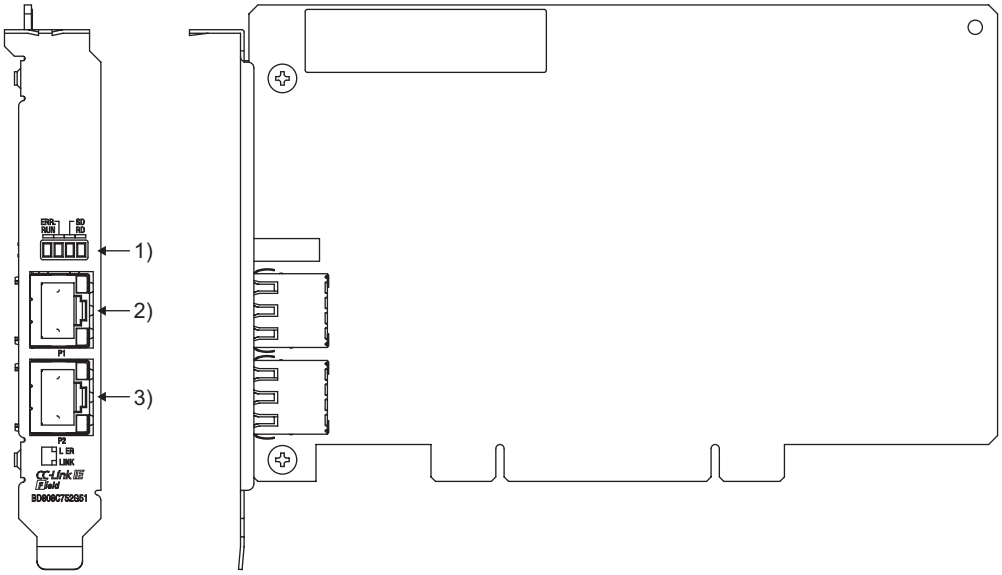
This section explains the procedure before operating the CC-Link IE Field Network board.


Start
Check
Install the software package
Install the software package on a personal computer.
☞ Page 88, Section 6.2
Install the board
Install the board to a slot on the personal computer.
☞ Page 49, Section 4.3.4
Set the channel number
Set the channel number and confirm it with the utility.
☞ Page 50, Section 4.4
Check the board
Test the hardware of the installed board.
☞ Page 51, Section 4.5
Wire the cables
Wire the network cables for the installed board.
☞ Page 54, Section 4.6
Set the parameters
Set the parameters and check them with the utility.
☞ Page 109, CHAPTER 10
Check the network
Test the cable connection and data link on the network.
☞ Page 58, Section 4.7
Execute a user program
Execute a user program or utility.
End

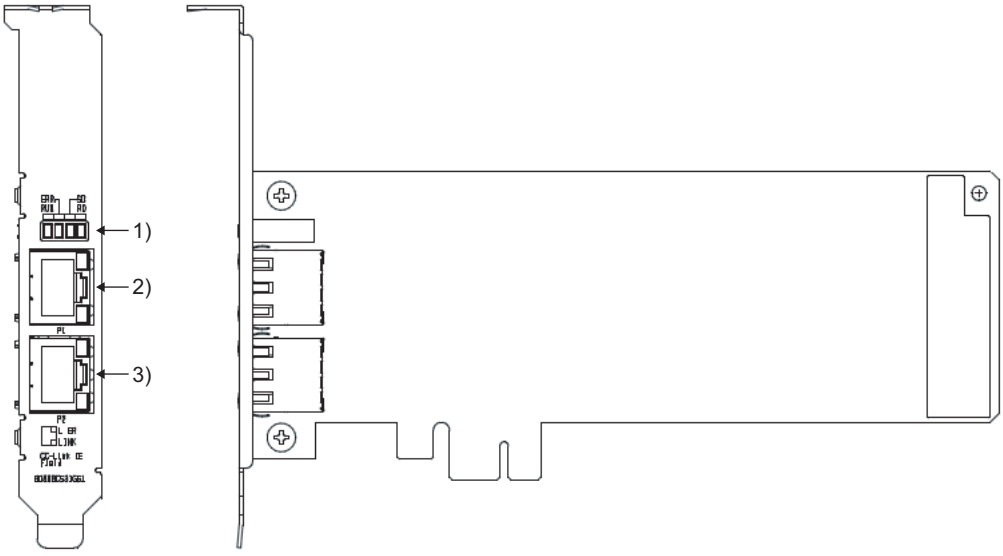
4.2 Part Names

This section explains each part name of the CC-Link IE Field Network board.

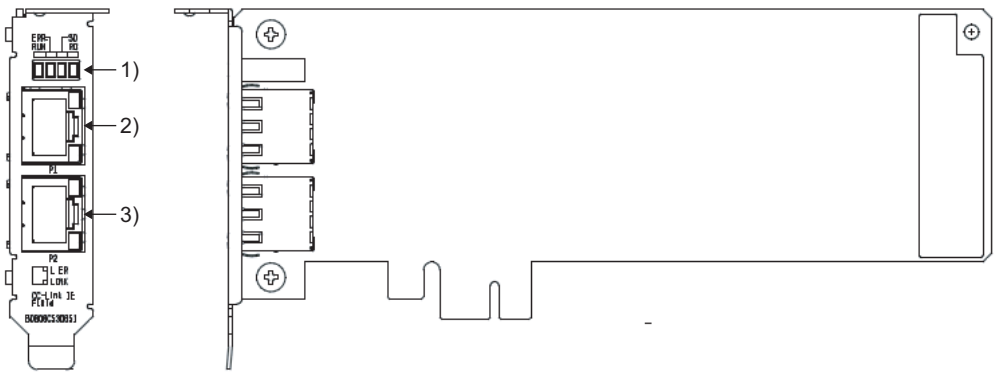
<Q80BD-J71GF11-T2>



<Q81BD-J71GF11-T2 (standard size)>



<Q81BD-J71GF11-T2 (low profile size)>

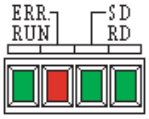


No.	Name	Description	Reference
1)	Operation LED	Indicates the operating status of the CC-Link IE Field Network board.	Page 45, Section 4.2 (1)
2)	P1	Indicates the PORT1 connector for connecting to CC-Link IE Field Network.	Page 46, Section 4.2 (2)
3)	P2	Indicates the PORT2 connector for connecting to CC-Link IE Field Network.	

(1) Indicator LED

Display the operating status of the CC-Link IE Field Network board.

If an error occurred, refer to the troubleshooting and take a corrective action. (Page 192, Section 16.7.11)



(a) When the RUN LED is OFF or ON

The same LED display as a network module.

Name	Status	Description
RUN	ON	Operating normally
	OFF	One of the following error has occurred. • A hardware failure or a board WDT error has occurred. • The driver is not started.
ERR.	ON	One of the following error has occurred. • An error was detected in all stations. • Modules with same station number exist on the network. • A network parameters is corrupted. • The network parameter does not match the installation. (Reserved station specification, number of connected stations, network number etc.)
	Flashing	A data link error station is detected.
	OFF	Operating normally
SD	ON	Sending data
	OFF	Data not sent
RD	ON	Receiving data
	OFF	Data not received

(b) When the RUN LED is flashing

An error which is peculiar to boards has occurred.

Name	Status	Description
RUN	Flashing	One of the following error has occurred. (Check ERR.LED, and RD LED.)
ERR.	ON	PCI bus/PCI Express bus error has occurred.
RD	ON	Driver WDT error has occurred.

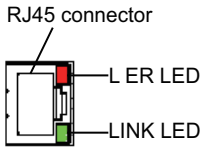
(c) When checking channel number

The status is displayed as shown below according to the current channel number while opening the "Channel No. Setting" screen. (Page 124, Section 11.1).

<181> <182> <183> <184>

(2) Connector

The PORT1 and PORT2 connector for CC-Link IE Field Network.



(a) RJ45 connector

Connect an Ethernet cable. (☞ Page 56, Section 4.6.2)

(b) Connector part LED

Display the link status and reception status of the CC-Link IE Field Network board.

Name	Status	Description
L ER	ON	• The module received abnormal data. • The board is performing loopback.
	OFF	• The module received normal data. • The board does not perform loopback.
LINK	ON	Linkup in progress.
	OFF	Linkdown in progress.

4.3 Installation

This section explains precautions for handling and installation environment of the CC-Link IE Field Network board.

4.3.1 Handling precautions

The following explains precautions for handling.

(1) Precautions for turning on

- Do not touch any connectors while power is on. Doing so may cause electric shock or malfunction.

(2) Handling precautions of the board

- Do not directly touch any conductive parts and electronic components of the board. Doing so may cause malfunction or failure of the board.
- Do not disassemble or modify the board. Doing so may cause failure, malfunction, injury, or fire.
- Before handling the board, touch a conducting object such as a grounded metal to discharge the static electricity from the human body. Failure to do so may cause the board to fail or malfunction.
- Handle the board in a place where static electricity will not be generated. Failure to do so may cause a failure or malfunction.
- The board is included in an antistatic envelope. When storing or transporting it, be sure to put it in the antistatic envelope. Failure to do so may cause a failure or malfunction.
- Do not drop or apply a strong impact to the board. Doing so may cause a failure or malfunction.

4.3.2 Installation environment

For installation of the personal computer in which the CC-Link IE Field Network board is installed, refer to the manual for the personal computer.

(1) Precautions for board installation environment

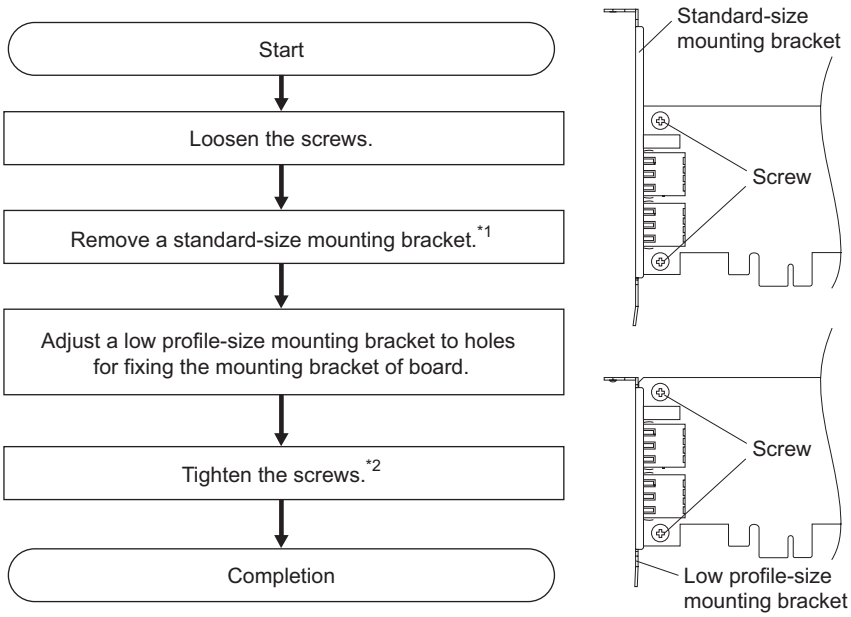
- Use the board in an environment that meets the general specifications in this manual. Failure to do so may result in electric shock, fire, malfunction, or damage to or deterioration of the product.

(2) Precautions for personal computer installation environment

- Always ground the personal computer to the protective ground conductor. Failure to do so may cause a malfunction.

4.3.3 Procedure for replacing mounting brackets

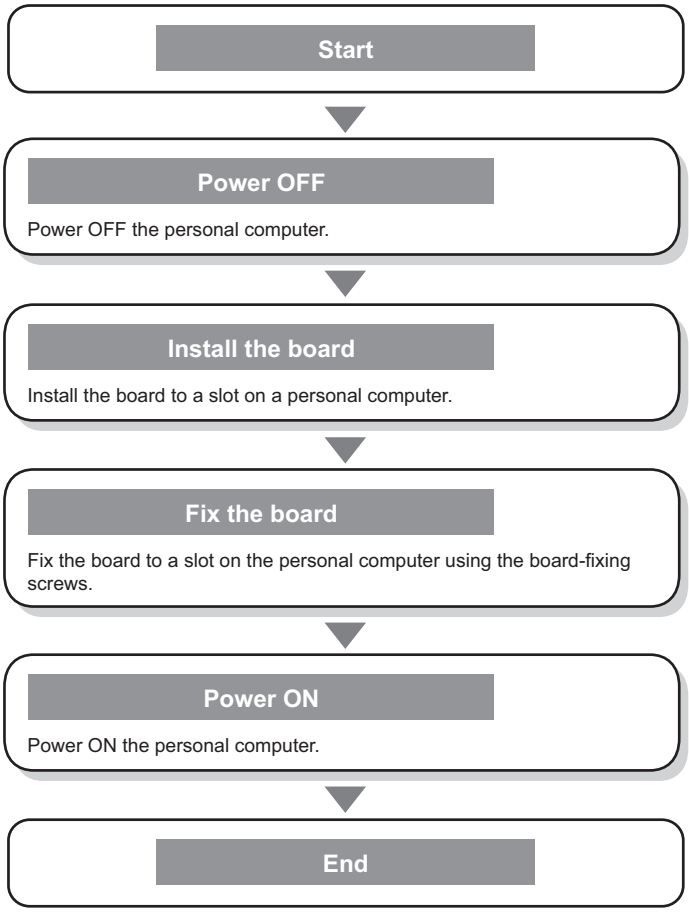
The following shows the procedure for replacing a standard-size mounting bracket with a low profile-size mounting bracket.



*1 : Keep the unused brackets for system reconfiguration.
*2 : Screw tightening torque: 0.425 to 0.575N•m(4.34 to 5.86kgf•cm)

4.3.4 Board installation

The following flowchart shows the board installation procedure.


Start
Power OFF
Power OFF the personal computer.
Install the board
Install the board to a slot on a personal computer.
Fix the board
Fix the board to a slot on the personal computer using the board-fixing screws.
Power ON
Power ON the personal computer.
End

(1) Precautions for turning on

- Turn off the external power supply for the system in all phases before installing the board to or removing it from the personal computer. Failure to do so may result in electric shock or cause the board to fail or malfunction.

(2) Precautions for installing the board

- Fix the board by tighten the board-fixing screws within the specified torque range. Undertightening may cause drop of the component or wire, short circuit, or malfunction. Overtightening may damage the screw and/or module, resulting in drop, short circuit, or malfunction. For the tightening torque of the board-fixing screws, refer to the manual supplied with the personal computer.
- Before handling the board, touch a conducting object such as a grounded metal to discharge the static electricity from the human body. Failure to do so may cause the board to fail or malfunction.
- Install the board to a personal computer which is compliant with PCI standard or PCI Express® standard (Section 2.5 Operating Environment). Failure to do so may cause a failure or malfunction.
- Securely insert the board into the PCI slot following the board installation instruction of the personal computer. Incorrect insertion of the board may lead to a malfunction, failure or drop of the board.
- When installing the board, care should be taken not to get injured by an implemented component or a surrounding member.
- When installing the board, care should be taken not to contact with other boards.

4.4 Setting Channel Numbers

Channel number is set per board, and used to identify the board. 181 is set for the board channel number as a factory default and the range of 181 to 184 can be set.
Channel numbers being set are used to specify the target boards in setting parameters and performing the MELSEC data link library function. When using two or more boards in a single personal computer, set channel numbers not to overlap.

(1) Setting method

Set the channel numbers on the "Channel No. Setting" screen in CC IE Field Utility.

(☞ Page 124, Section 11.1)

Point

Channel numbers set on the "Channel No. Setting" is saved to the board.
The channel numbers being set are retained when performing the following operations.

- Rebooting a personal computer
- Board installation position change
- Board replacement to another personal computer

4.5 Tests Before Wiring (Standalone Tests of the Board)

This section explains the CC-Link IE Field Network board tests before network wiring.

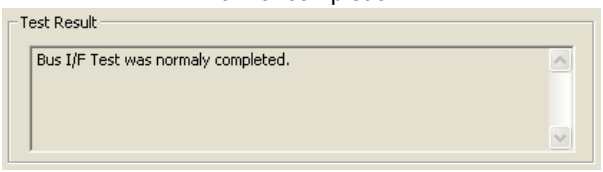
Point

- Ethernet cable
  Do not connect an Ethernet cable to the CC-Link IE Field Network board in testing a board alone. Doing so may cause the test to fail.

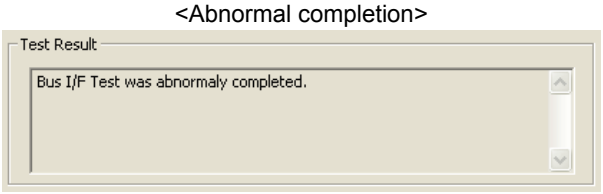
4.5.1 Bus I/F test

Bus I/F test checks the hardware of the Bus I/F function of the CC-Link IE Field Network board.
The following shows a procedure for performing a test.

<Normal completion>



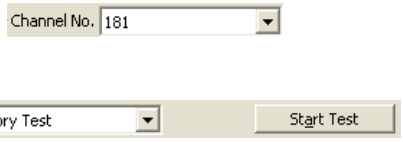
<Abnormal completion>



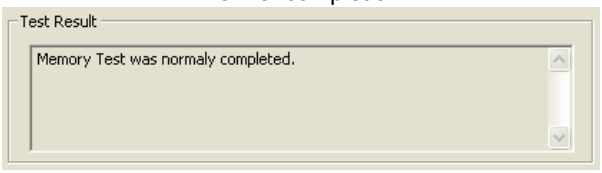
1. **Select a board to be tested on the "Board Diagnostics" screen in CC IE Field Utility (☞ Page 142, Section 13.1).**
2. **Set Mode to "Bus I/F Test" and click the Start Test button.**
3. **The result is displayed on "Test Result" field.**
   If the test completes abnormally, consult your local Mitsubishi service center or representative.

4.5.2 Memory test

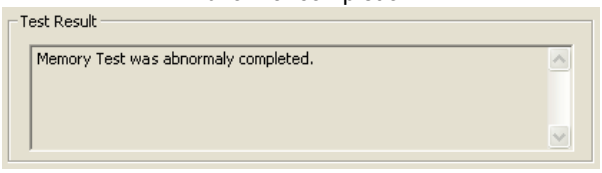
Memory test checks the hardware of the memory function of the CC-Link IE Field Network board.
The following shows a procedure for performing a test.



<Normal completion>



<Abnormal completion>

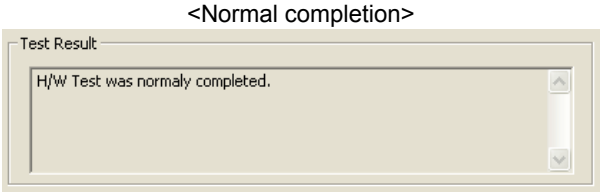


1. **Select a board to be tested on the "Board Diagnostics" screen in CC IE Field Utility (☞ Page 142, Section 13.1).**
2. **Set Mode to "Memory Test" and click the Start Test button.**
3. **The result is displayed on "Test Result" field.**
   If the test completes abnormally, consult your local Mitsubishi service center or representative.

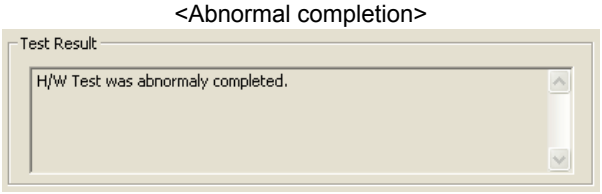
4.5.3 Hardware test

Hardware test checks the hardware in the CC-Link IE Field Network board.
The following shows a procedure for performing a test.

<Normal completion>



<Abnormal completion>



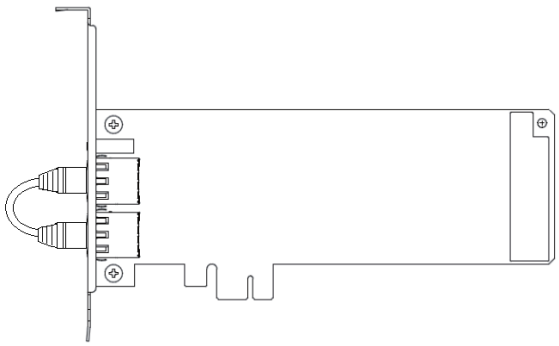
1. **Select a board to be tested on the "Board Diagnostics" screen in CC IE Field Utility (☞ Page 142, Section 13.1).**
2. **Set Mode to "H/W Test" and click the Start Test button.**
3. **The result is displayed on "Test Result" field.**
   If the test completes abnormally, consult your local Mitsubishi service center or representative.

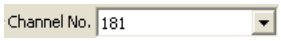
Point

- Operation during hardware test
  Do not access the buffer memory during the hardware test. Doing so may cause the test to fail.

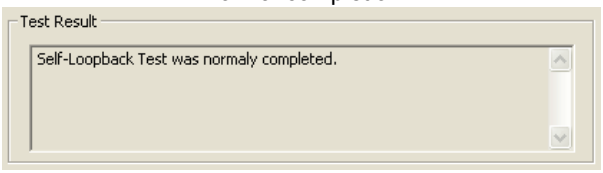
4.5.4 Self-loopback test

Self-loopback test checks the hardware of the CC-Link IE Field Network board alone, including the send/receive circuit of the transmission system and cables.
The following shows a procedure for performing a test.

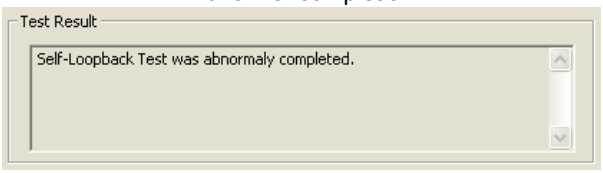




<Normal completion>



<Abnormal completion>



1. **Connect Ethernet cables to the RJ45 connector(PORT1) and RJ45 connector(PORT2) of the CC-Link IE Field Network board.**
2. **Select a board to be tested on the "Board Diagnostics" screen in CC IE Field Utility (☞ Page 142, Section 13.1).**
3. **Set Mode to "Self-Loopback Test" and click the Start Test button.**
4. **The result is displayed on "Test Result" field.**
   If the test completes abnormally, replace the Ethernet cable and execute the test again.
   Please consult your local Mitsubishi service center or representative with the detailed problem description.

Point

- When conducting the self-loopback test, use a normal Ethernet cable. (☞ Page 33, Section 2.4.1)

4.6 Wiring

This section explains the cable wiring and precautions. For cables and hubs used for the wiring, and network configuration, refer to the system configuration. (☞ Page 25, CHAPTER 2).

4.6.1 Wiring Precautions

The following explains wiring precautions.

(1) Precautions for turning on

- Turn off the external power supply for the system in all phases before installing the board or starting wiring. Failure to do so may result in electric shock, damage to the product, or malfunction.
- After installation of the board and wiring, attach the cover on the module before turning it on for operation. Failure to do so may result in electric shock.

(2) Handling

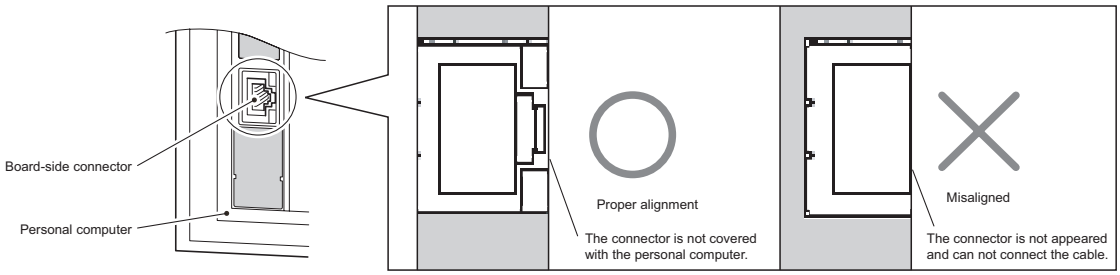
- Place the Ethernet cable in a duct or clamp them. If not, dangling cable may swing or inadvertently be pulled, resulting in damage to the module or cables or malfunction due to poor contact.
- Prevent foreign matter such as dust or wire chips from entering the personal computer. Such foreign matter may cause a fire, failure, or malfunction.
- Do not install the communication cables together with the main circuit lines or power cables. Keep a distance of 100mm (3.94 in.) or more between them. Failure to do so may result in malfunction due to noise.
- Securely plug the communication cable to the connector of the board. Then, check for any incomplete connection. Poor contact may cause an erroneous input or output.
- Do not touch the core of the cable-side or module-side connector, and protect it from dirt or dust. If oil from your hand, dirt or dust is attached to the core, it can increase transmission loss, arising a problem in data link.
- Attach a connector cover to a connector which is not connected to an Ethernet cable to prevent foreign matter such as dirt or dust.

(3) Precautions for Ethernet cable

- Check the following:
  - Is any Ethernet cable disconnected?
  - Does any Ethernet cable short?
  - Are the connectors securely connected?
- Do not use Ethernet cables with broken latches. Doing so may cause the cable to unplug or malfunction.
- The maximum station-to-station distance is 100m. However, the distance may be shorter depending on the operating environment of the cable. For details, contact your cable manufacturer.
- The bend radius of the Ethernet cable is limited. For details, see the specifications of the Ethernet cable to be used.

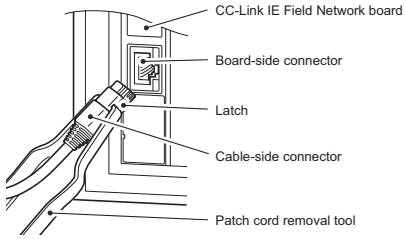
(4) Connecting and disconnecting Ethernet cable

- Misalignment of the connecting slot of the personal computer may lead to a slight installation error. When the board-side connector is covered with the personal computer, Ethernet cable can not be connected properly. Check the board installation status not to overlap the connector and the personal computer.


Board-side connector
Personal computer
Proper alignment
The connector is not covered with the personal computer.
Misaligned
The connector is not appeared and can not connect the cable.

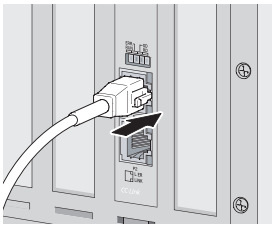
- When disconnecting the cable from the board, do not pull the cable by the cable part. Pulling the cable connected to the board may result in malfunction or damage to the board or cable.
- Depending on the adjacent boards and installing slot position, connecting/disconnecting the communication cable may be difficult. In this case, use the following dedicated tool.

Product name	Model name	Maker
Patch cord removal tool	PCRT1	Panduit Corp.

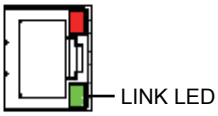


4.6.2 Ethernet cable connection

(1) Connecting the cable



1. **Turn off a personal computer to which the CC-Link IE Field Network board is installed, and the connected device.**
2. **Push the Ethernet cable connector into the CC-Link IE Field Network board and connected device until it clicks. Pay attention to the connector's direction.**

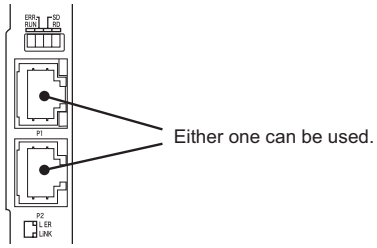


3. **Turn on the personal computer.**
4. **Turn on the connected device.**
5. **Check whether the LINK LED of the port connected with an Ethernet cable is on. The time between the power-on and the LINK LED turning on may vary. The LINK LED usually turns on in a few seconds. Note, however, that the time may be extended further if the linkup process is repeated depending on the status of the device on the line. If the LINK LED does not turn on, refer to the troubleshooting section and take a corrective action. (Page 166, CHAPTER 16)**

Point

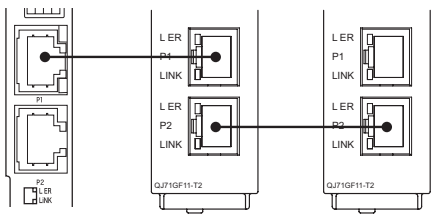
PORT1 and PORT2 need not to be distinguished.

- When only one connector is used in star topology, either one of the PORT1 and PORT2 can be used.

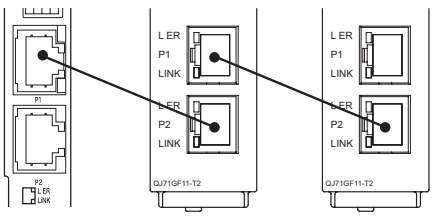


- When using two connectors for line topology and ring topology, an Ethernet cable can be connected to the connectors in any combination. For example, the cable can be connected between PORT1s and between PORT1 and PORT2.

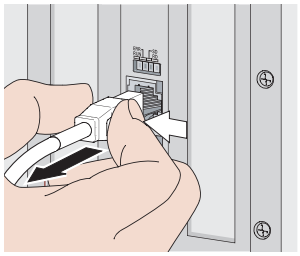
Connection between PORT1s or PORT2s



Connection between PORT1 and PORT2



(2) Disconnecting the cable



1. **Power off the system.**
2. **Press the latch down and unplug the Ethernet cable.**

4.7 Tests After Wiring

This section describes loop and cable tests that should be performed after network wiring.
Perform these tests to the actual operating network configuration.

4.7.1 Loop test

The loop test checks each station's network line and parameter setting status to verify whether the network is operating correctly.

The test allows checking the following items.

Item	Description
Master station duplication check	Check if master stations on the network are duplicated.
Station number duplication check	Check if stations on the network are duplicated.
Out-of-range station No. check	Check if slave stations exceeding the number of slave stations set for the master station are connected.
Reserved station specification check	Check if specified reserved stations are actually connected.
Consistency check of the number of connected stations	Consistency check for the number of total slave stations set by parameters and actual connected slave stations.
Station type check	Consistency check for the station type of slave stations set in master stations and actual connected station type.
Loopback check	Detect if loopback is being performed while "Use" is set for "Loopback Function Setting" in the Network Parameter screen for the master station.

(1) Executing loop tests

The following explains a procedure for loop test, assuming the executing station (master station) is the CC-Link IE Field Network board and the target station (local station) as the CC-Link IE Field Network module.

Point

The loop test can be executed only when the CC-Link IE Field Network board is the master station.
When it is the local station, execute the test from the master station in the network system to which the local station is connected.

(a) Preparing loop tests

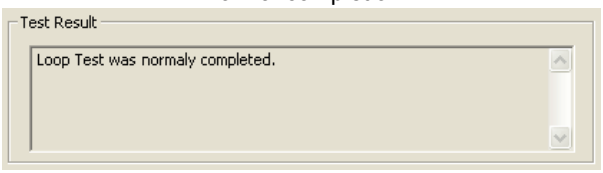
Prepare the following before loop test.

1. **Check for the power discontinuity**
   Turn OFF the personal computer.
   Turn OFF the module.
2. **Cable connection**
   Connect Ethernet cables to each station.
3. **Turn-ON**
   Turn ON the personal computer.
   Turn ON the module.

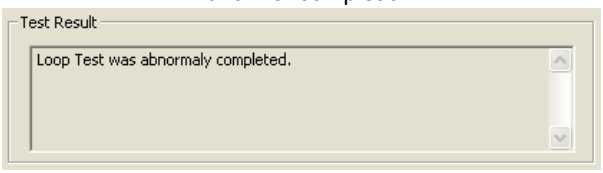
(b) Executing loop tests

The executing station (master station) performs a loop test.

<Normal completion>



<Abnormal completion>



1. **Select a board to be tested on the "Board Diagnostics" screen in CC IE Field Utility (☞ Page 142, Section 13.1).**
2. **Set Mode to "Loop Test" and click the Start Test button.**
3. **The result is displayed on "Test Result" field.**
   If the test completes abnormally, check the error cause on the "CC IE Field Diagnostics" screen, process the error.
   (☞ Page 144, Section 13.2)

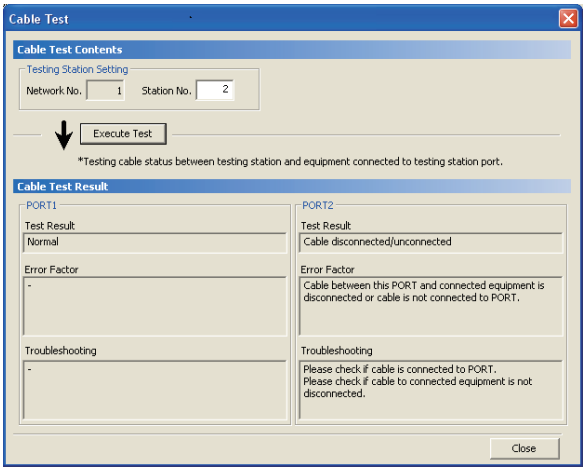
Point

- During the loop test, data link stops on all stations.
- When a faulty station cannot be displayed on the "CC IE Field Diagnostics" screen
  The following errors may have occurred.
  - Master station duplication
  - Station number duplication
  - Slave station type error

  When the faulty station is a module, identify the error causes on the System Monitor screen in GX Works2.
  When the faulty station is a board, identify the error causes on the "Board Diagnostics" screen.
  (☞ Page 142, Section 13.1)

4.7.2 Cable test

Cable test checks if the Ethernet cables are properly connected.
Only an Ethernet cable connected to the PORT1 or PORT2 of the target station is tested. For the whole network status, check the loop test. (☞ Page 58, Section 4.7.1)



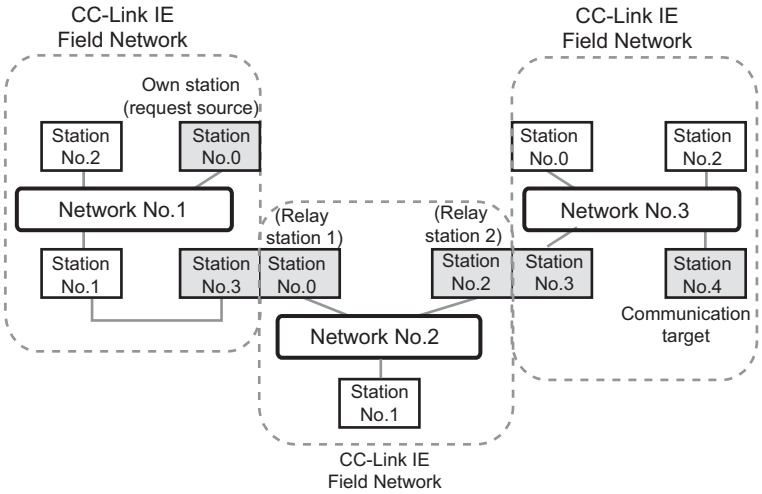
1. **Start Utility on the computer where CC-Link IE Field Network board is installed.**
2. **The "Cable test" screen is displayed.**

   Select [Diagnostics] ⇨ [CC IE Field Diagnostics] ⇨ Cable Test... button.
3. **Enter a station number and click the Execute Test button so that the test can be operated. When an error occurs, take actions according to the error message.**

4.7.3 Communication test

Communication test checks if transient transmission data can be properly routed from the own station to the communication target.

Take the following system configuration as an example of communication test procedure.



Routing parameters for stations of network No.1

	Target Network No.	Relay Network No.	Relay Station No.
1	2	1	3
2	3	1	3

No setting is required for station No.3 because data are transmitted via the station itself.

Routing parameters for stations of network No.2

	Target Network No.	Relay Network No.	Relay Station No.
1	1	2	0
2	3	2	2

No setting is required for station No.0 because data are transmitted via the station itself.

No setting is required for station No.2 because data are transmitted via the station itself.

Routing parameters for stations of network No.3

	Target Network No.	Relay Network No.	Relay Station No.
1	1	3	3
2	2	3	3

No setting is required for station No.3 because data are transmitted via the station itself.

1. **Start Utility on the computer where CC-Link IE Field Network board is installed.**

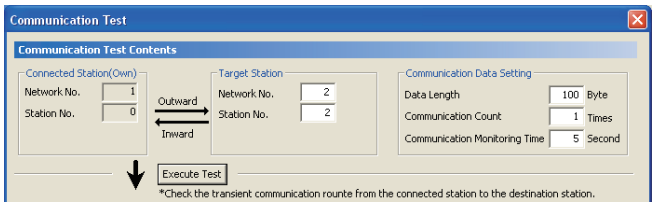
2. **Set the routing parameters on the "Routing Parameter Setting" screen as shown in the figure to left. (☞ Page 121, Section 10.2.7)**

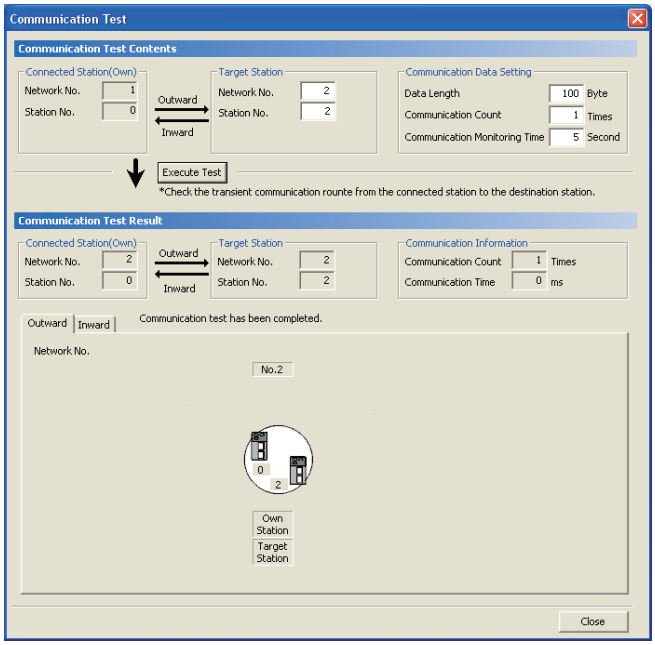
3. **Write the network parameters being set to the CC-Link IE Field Network board.**

[Online] ⇨ [Write to Board]

4. **Reset the specified board.**

[Online] ⇨ [Reset operation]





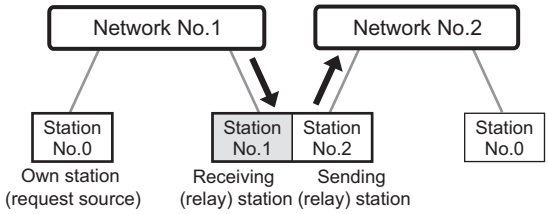
5. **Open the "Communication Test" screen and set data to "Communication Destination Setting" and "Communication Data Setting".**

Select [Diagnostics] ⇨ [CC IE Field Diagnostics] ⇨ Communication Test... button.

6. **Click the Execute Test button to perform the communication test. If an error occurs, take actions according to the error message.**

Point

- When conducting the test on relay stations, set the receiving (relay) station in "Communication Destination Setting". Setting the sending (relay) station will cause an error.



CHAPTER 5 FUNCTIONS

This chapter explains the functions of the CC-Link IE Field Network board.

5.1 Function List

The following table explains the function list of the CC-Link IE Field Network board.

(1) Cyclic transmission

Function		Description	Reference
Communication with other stations	Communication by RX and RY	I/O data in bit units is communicated between the own station and other stations.	Page 65, Section 5.2 Page 112, Section 10.2.2
	Communication by RWw and RWr	I/O data in word units is communicated between the own station and other stations.	
Link refresh		Transfer between the link device of the CC-Link IE Field Network board and the device of the driver is performed automatically.	Page 68, Section 5.2.2 Page 119, Section 10.2.5
Mode selection for cyclic transmission		This mode is selected for optimizing the performance of cyclic transmission based on the cyclic transmission and transient transmission frequency. The mode can be selected from "Online (Normal mode)" and "Online (High-speed mode)".	Page 111, Section 10.2.1 Page 256, Appendix 6
Link scan mode setting		Constant link scan setting can be selected to execute the link scan at a constant time interval.	Page 114, Section 10.2.2 (1)
Assurance of cyclic data integrity		The cyclic data integrity is assured in units of 32 bits or station-based units.	Page 69, Section 5.2.3 Page 114, Section 10.2.2 (1)
Input status setting for data link faulty station		Select whether the input data from another station where the data link error occurred is cleared or held.	Page 71, Section 5.2.4 Page 116, Section 10.2.3
Cyclic transmission stop and restart		During debugging and other operations, cyclic transmission is stopped (Data reception from the slave station and data transmission from own stations are stopped). Also, the stopped cyclic transmission is restarted. Transient transmission is not stopped.	Page 72, Section 5.2.5 Page 119, Section 10.2.5

(2) Transient transmission

Function	Description	Reference
Communication by MELSEC data link library function	Communicate with other station's programmable controller by MELSEC data link library function. • Device reading and writing of other station's programmable controller • Remote operation to other station's programmable controller • Data reading and writing of an intelligent device station	Page 73, Section 5.3.1 Page 75, Section 5.4 Page 164, CHAPTER 14
Seamless transmission with different networks	Setting the routing parameters beforehand also enables transient transmission to stations in different networks. Communication can also be performed with CC-Link IE Controller Network and MELSECNET/H.	Page 74, Section 5.3.2 Page 121, Section 10.2.7

(3) RAS function

Function	Description	Reference
Slave station disconnection	Only the stations where an error has occurred, including slave stations, are disconnected from the network, and the data link is continued only with the stations operating normally. In a line topology system, stations after the station where the error occurred are disconnected.	-
Automatic return	When a station disconnected from a network due to a data link error recovers from the error, the station is automatically reconnected to the network and restarts data link.	-
Loopback function	This function disconnects only faulty stations, and continues data link with only normal stations. It also continues data link with normal stations connected after the faulty station which is disconnected in a line topology.	Page 85, Section 5.8

(4) Diagnostic function

Function		Description	Reference
CC-Link IE Field Network diagnostics		The status of the CC-Link IE Field Network can be checked by CC IE Field Utility. The faulty area, cause of the fault and its corrective action, and event history can be checked.	Page 144, Section 13.2
Individual board diagnostics	Bus I/F test	Check the hardware of the bus I/F function of the CC-Link IE Field Network board.	Page 51, Section 4.5.1
	Memory test	Check the memory of the CC-Link IE Field Network board.	Page 52, Section 4.5.2
	Hardware test	Check the internal hardware of the CC-Link IE Field Network board.	Page 52, Section 4.5.3
	Self-loopback test	Check the communication circuit of the transmission system of the CC-Link IE Field Network board.	Page 53, Section 4.5.4
Own network diagnostics	Loop test	Check the network circuit status and parameter setting status of each station.	Page 58, Section 4.7.1
	Cable test	Check the connection status of the Ethernet cable.	Page 60, Section 4.7.2
Other network diagnostics	Communication test	Check whether the communication path for transient transmission from the own station to the target station is correct.	Page 61, Section 4.7.3

(5) Other functions

Function	Description	Reference
Reserved station specification	The reserved stations are included in the number of stations that will be connected to the network in the future without actually connecting them. Reserved stations are not detected as faulty stations even though they are not actually connected.	Page 75, Section 5.4 Page 112, Section 10.2.2 Page 161, Section 13.2.7
Reserved station function disable	Reserved station specification can be temporarily canceled without changing the parameters.	
Error invalid station and temporary error invalid station setting	Prevent the master station from detecting a slave station as a faulty station even if the slave station is disconnected during data link. This can be used when replacing a slave station during data link, for instance.	Page 83, Section 5.6 Page 112, Section 10.2.2 Page 162, Section 13.2.8
Event notification to program	Event conditions are checked every link scan, and if the event conditions are met, notifies events to the user program.	Page 84, Section 5.7 Page 117, Section 10.2.4
Driver WDT function	This function monitors the operation of the software (operating system, driver) inside the hardware.	Page 86, Section 5.9

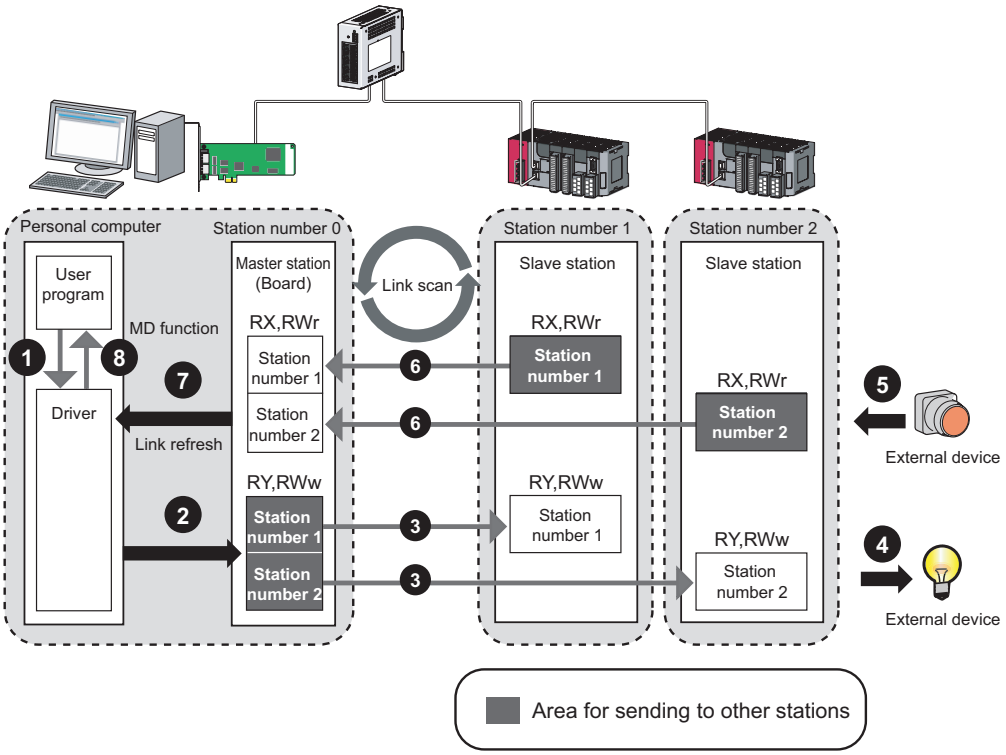
5.2 Cyclic Transmission

Data communication is available periodically among stations on the same network. Link devices (RX, RY, RWw, and RWr) are used.

5.2.1 Data flow and link device assignment

(1) Master and slave stations (except for local stations)

One-to-one communication is possible between the master and slave stations.
The status information of the link devices (RY, RWw) of the master station is output to the external device of the slave station, and the input status information from the external device of the slave station is stored in the link devices (RX, RWr) of the master station.



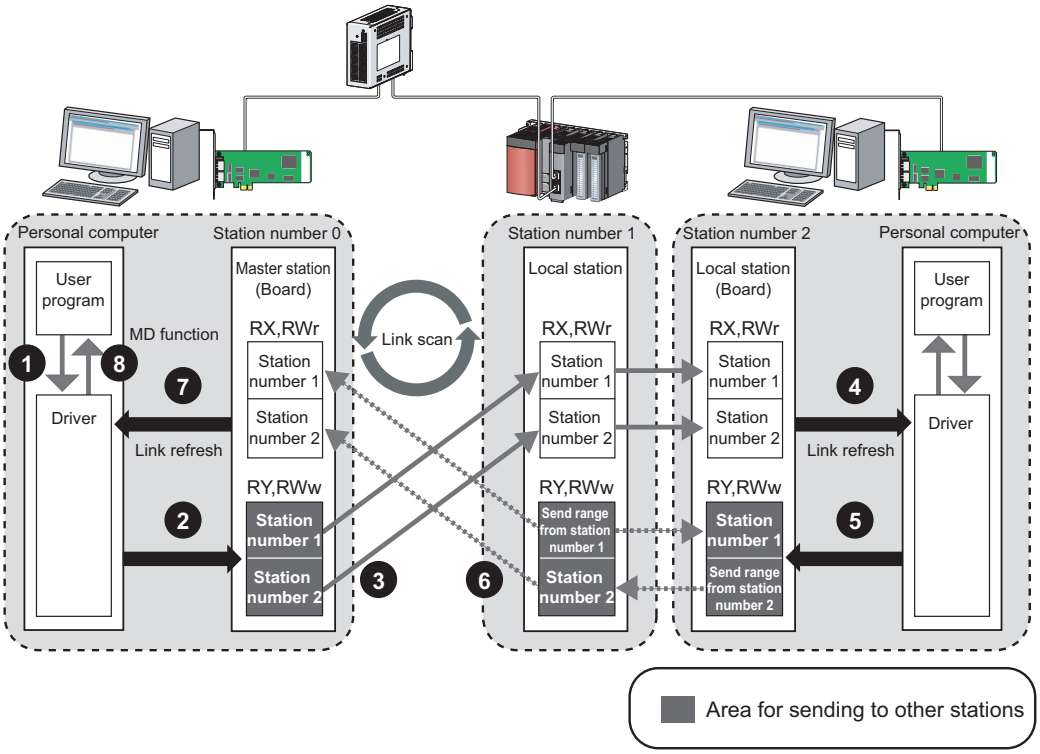
- Output from the master station
  - ❶ The status data of the user program are stored in the driver by MD function.
  - ❷ The status data of the driver are stored in the link devices (RY, RWw) of the master station (board) by link refresh.
  - ❸ The status data of the link devices (RY and RWw) of the master station are stored in the link devices (RY, RWw) of each slave station by link scan.
  - ❹ The status data of the link devices (RY, RWw) of the slave station are output to the external device.
- Input from the slave station
  - ❺ The status data of the external device are stored in the link devices (RX, RWr) of the slave station.
  - ❻ The status data of the link devices (RX, RWr) of the slave station are stored in the link devices (RX, RWr) of the master station by link scan.
  - ❼ The status data of the link devices (RX, RWr) of the master station (board) are stored in the driver by link refresh.
  - ❽ The status data of the driver are stored in the user program by MD function.

(2) Master and local stations

Data can be written into the send range of each station's link device (RY, RWw) and can be sent to any station on the same network.

The status data of the link devices (RY, RWw) of the master station are stored in the link devices (RX, RWr) of each local station.

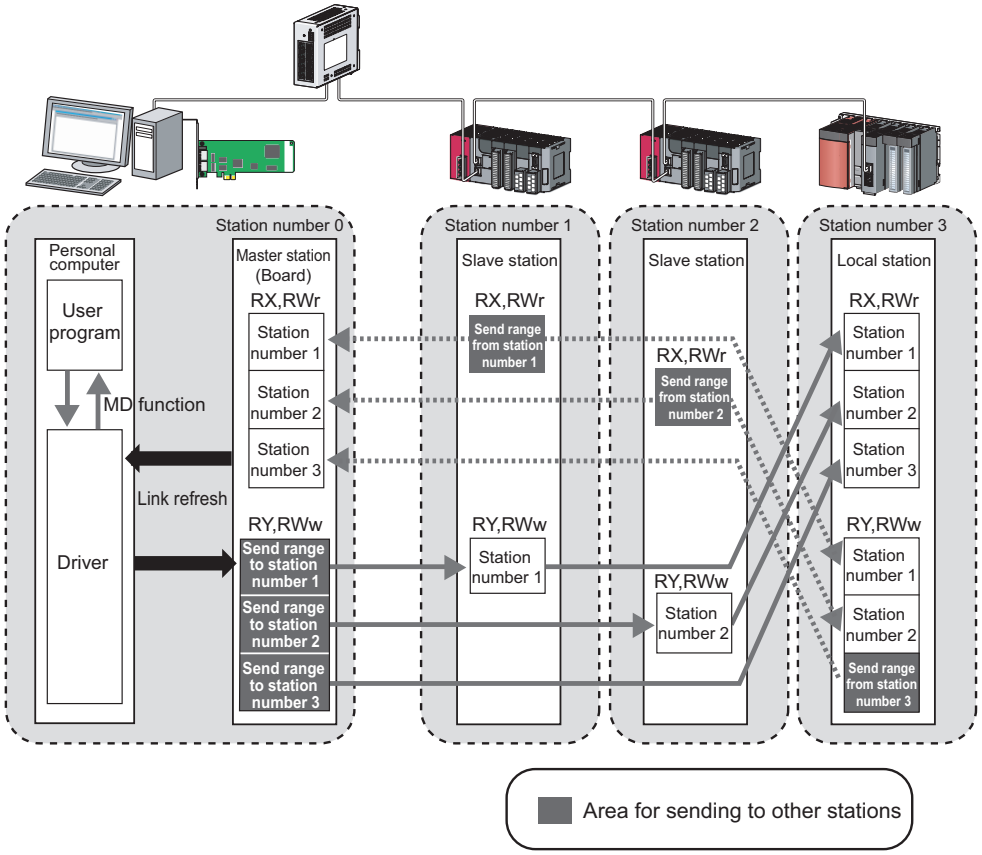
The status data of the link devices (RY, RWw) of local stations are stored in the link devices (RX, RWr) of the master station and the link devices (RY, RWw) of other local stations.



- Output from the master station
  - ❶ The status data of the user program are stored in the driver by MD function.
  - ❷ The status data of the driver are stored in the link devices (RY and RWw) of the master station (board) by link refresh.
  - ❸ The status data of the link device (RY, RWw) of the master station is stored in the link device (RX, RWr) of the local station by link scan.
  - ❹ The status data of the link device (RX, RWr) of the local station (board) is stored in the driver.
- Input from the local station
  - ❺ The status data of the driver is stored in the own station send range of the link device (RY, RWw) of the local station (board) by link refresh.
  - ❻ The status data of the link devices (RX and RWr) of the local station are stored in the link devices (RX, RWr) of the master station by link scan.
  - ❼ The status data of the link devices (RX, RWr) of the master station (board) are stored in the driver by link refresh.
  - ❽ The status of driver are stored in the user program by MD function.

(3) Coexistence of local stations and the other slave stations (other than local stations)

The data of all slave stations are also stored in the local stations in the same way as the master station.

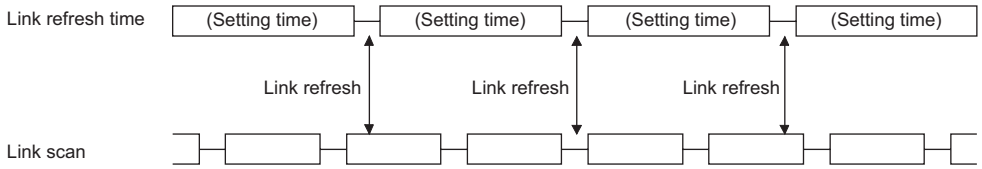


(4) Setting method

The link devices can be assigned in "Network Configuration Setting". (☞ Page 112, Section 10.2.2)

5.2.2 Link scan and link refresh

Link scan is executed "asynchronously" with the link refresh which is executed by the CC-Link IE Field Network board driver.



(1) Setting method

Link refresh is executed at the interval of time set for "Link refresh cycle" on the "Driver setting" screen of CC IE Field Utility. (☞ Page 119, Section 10.2.5)

Link refresh time can be checked on the "Board Diagnostics" screen. (☞ Page 142, Section 13.1)

Point

- The link refresh may not be executed in the set cycle because of such factors described below.
  - Performance of the personal computer CPU
  - Number of set refresh points
  - Number of installed CC-Link IE Field Network boards
  - Other running applications
  - Other running boards
- If the link refresh time exceeds the link refresh cycle set on the "Device setting" screen, perform any of the following measures.
  - Extend the link refresh cycle. (☞ Page 119, Section 10.2.5)
- If the shortened link refresh time effects the operation of the applications, perform the following measure.
  - Extend the link refresh cycle. (☞ Page 119, Section 10.2.5)

5.2.3 Assurance of cyclic data integrity

The cyclic data integrity can be assured in 32-bit units or for each station.

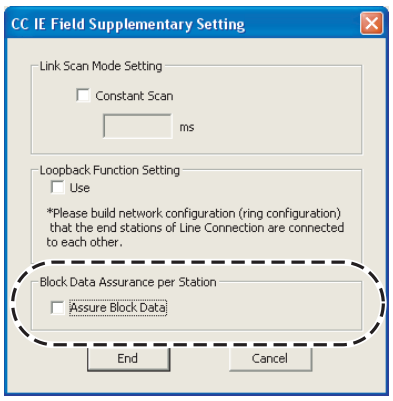
(1) 32-bit data assurance

The RWw and RWr data can be assured in 32-bit units.

(a) Setting method

Disable "Block Data Assurance per Station" on the "Supplementary Setting" screen in "Network Configuration Setting". (☞ Page 114, Section 10.2.2 (1))

To enable 32-bit data assurance, disable "Block Data Assurance per Station".


CC IE Field Supplementary Setting
Link Scan Mode Setting
Constant Scan
ms
Loopback Function Setting
Use
*Please build network configuration (ring configuration) that the end stations of Line Connection are connected to each other.
Block Data Assurance per Station
Assure Block Data
End
Cancel

Clear the check box.

(b) Access to cyclic data

When accessing link refresh target devices, the integrity of the 32-bit data can be assured by accessing RWw and RWr with the following conditions satisfied.

- Start device number of RWw/RWr is a multiple of 2.
- The number of points assigned to RWw/RWr is a multiple of 2.

Point

For data assurance of more than 32 bits, use the block data assurance per station or interlock programs.

(2) Block data assurance per station

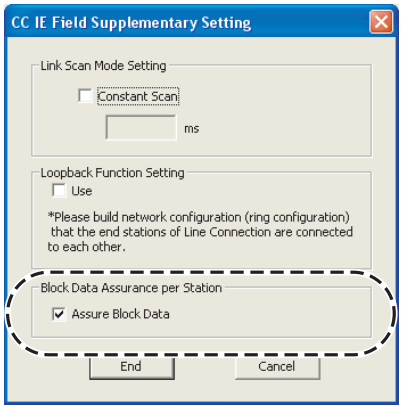
Integrity of the cyclic data is assured for each station by handshaking between the driver and the CC-Link IE Field Network board for a link refresh.

(a) Setting method

Enable "Block Data Assurance per Station" on the "Supplementary Setting" in "Network Configuration Setting".

(☞ Page 114, Section 10.2.2 (1))

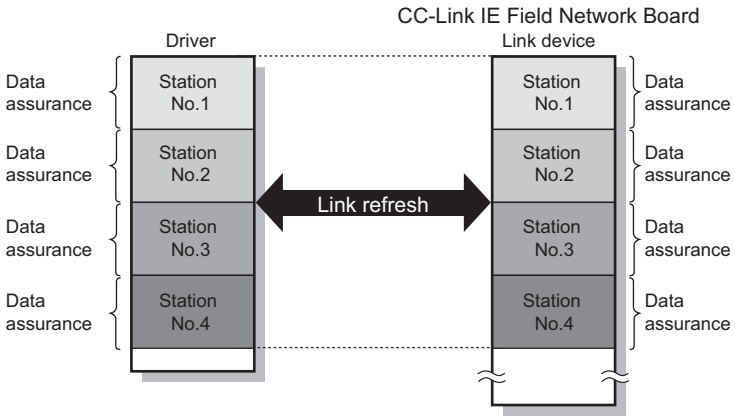
Once this setting is enabled on the master station, integrity of the data for all stations is assured for each station.


CC IE Field Supplementary Setting
Link Scan Mode Setting
Constant Scan
ms
Loopback Function Setting
Use
*Please build network configuration (ring configuration) that the end stations of Line Connection are connected to each other.
Block Data Assurance per Station
Assure Block Data
End
Cancel

Select the check box.

(b) Access to link devices

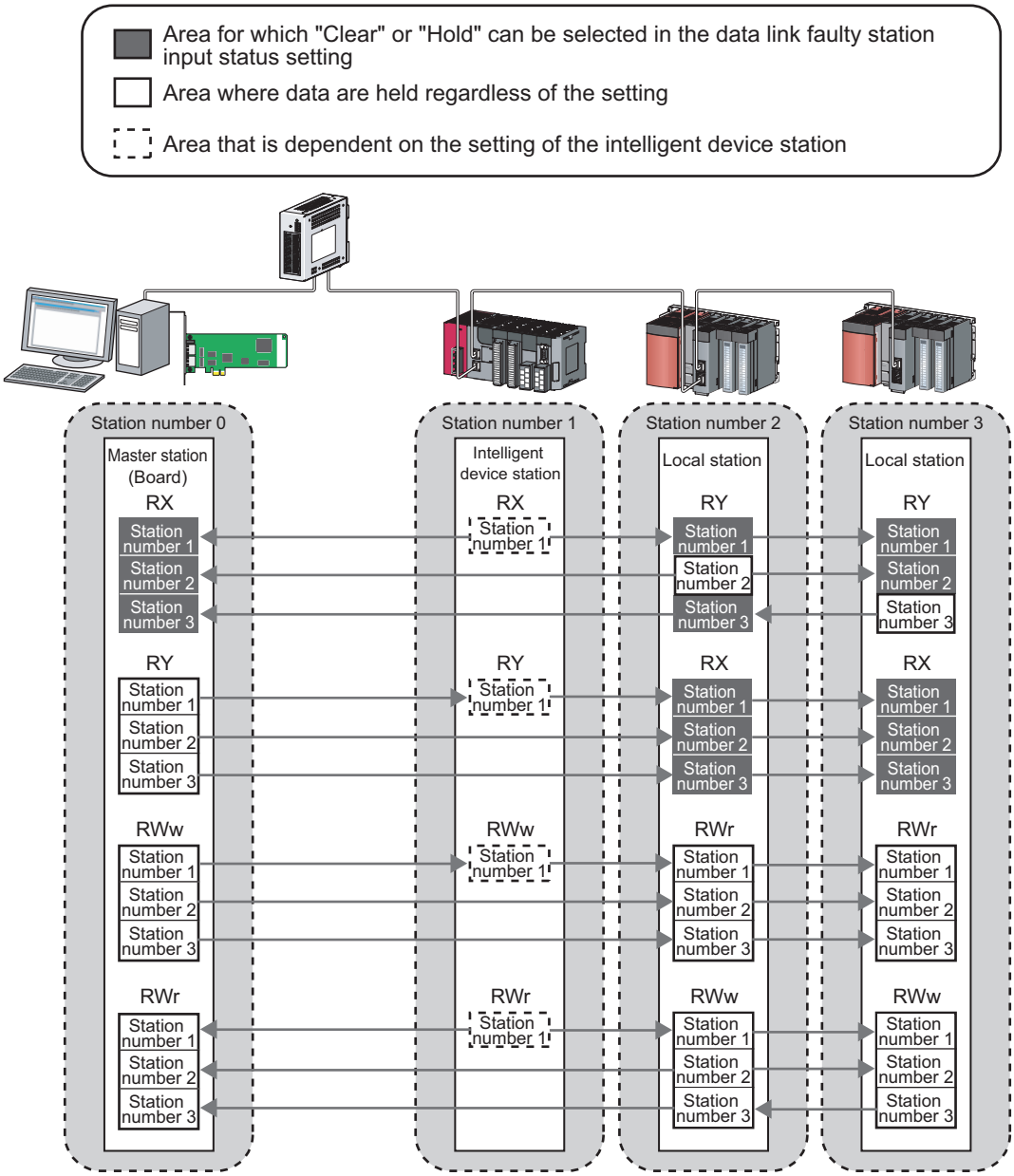
During a link refresh, data are assured for each station as shown below.



5.2.4 Input status of data link error station setting

Input data from the data link faulty station can be either cleared or held with the CC-Link IE Field Network board.

Input data	Range where the settings are enabled	Input status in case of failure
RX and RY	Master station RX Local station RX and RY (only the input data from other stations)	Clearing or holding the input data can be selected.
RWw and RWr	Master station RWr Local station RWw and RWr (only the input data from other stations)	The input data are held regardless of any setting.

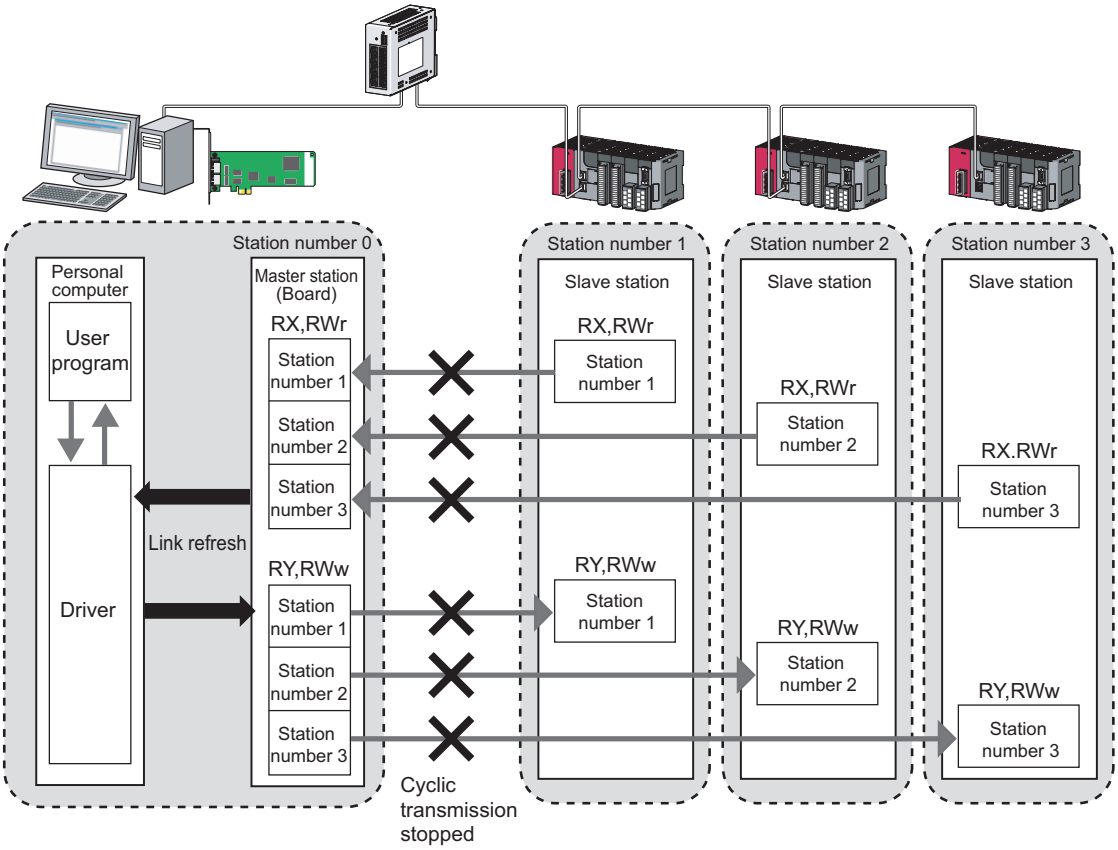

Area for which "Clear" or "Hold" can be selected in the data link faulty station input status setting
Area where data are held regardless of the setting
Area that is dependent on the setting of the intelligent device station
Station number 0
Master station (Board)
Station number 1
Intelligent device station
Station number 2
Local station
Station number 3
Local station
RX
RY
RWw
RWr
Station number 1
Station number 2
Station number 3

(1) Setting method

Input status of data link faulty station can be set in the "Network Operation Setting". (☞ Page 116, Section 10.2.3)

5.2.5 Cyclic transmission stop and restart

During debugging and other operations, cyclic transmission can be stopped (Data reception from the slave stations and data transmission from the own station can be stopped). The stopped cyclic transmission can be restarted. Transient transmission is not stopped.



(1) Setting method

Cyclic transmission stop and restart are operated on the "Link Start/Stop" screen. (☞ Page 158, Section 13.2.5)

Point

- The link start/stop is not available in loop test mode.
- When the board is reset or the system is powered off and then on
  Even if cyclic transmission was stopped by link stop, it will be restarted by resetting the board or powering off and then on the system.
- Station where link start cannot be performed
  Link start cannot be performed in the following cases.
  - Station where cyclic transmission was stopped due to an error
  - Station where link was stopped by a command from another station*1
  - Station where link was stopped by link special relay (SB) or link special register (SW)*1

*1 : Selecting "Forced Link Start" will start the link.

Remark

Cyclic transmission can be started and stopped with link special relay (SB) and link special register (SW). (☞ Page 224, Appendix 3, Page 236, Appendix 4)

5.3 Transient Transmission

This function allows communication with other stations, using the MELSEC data link library function. Communication is also possible with different networks.

5.3.1 Communication on the same network

Using MELSEC data link library, the programmable controllers of other stations and the buffer memory of the intelligent function module installed with the head module can be accessed. (☞ Page 164, CHAPTER 14)

(1) Setting method

Use the MELSEC data link library function.

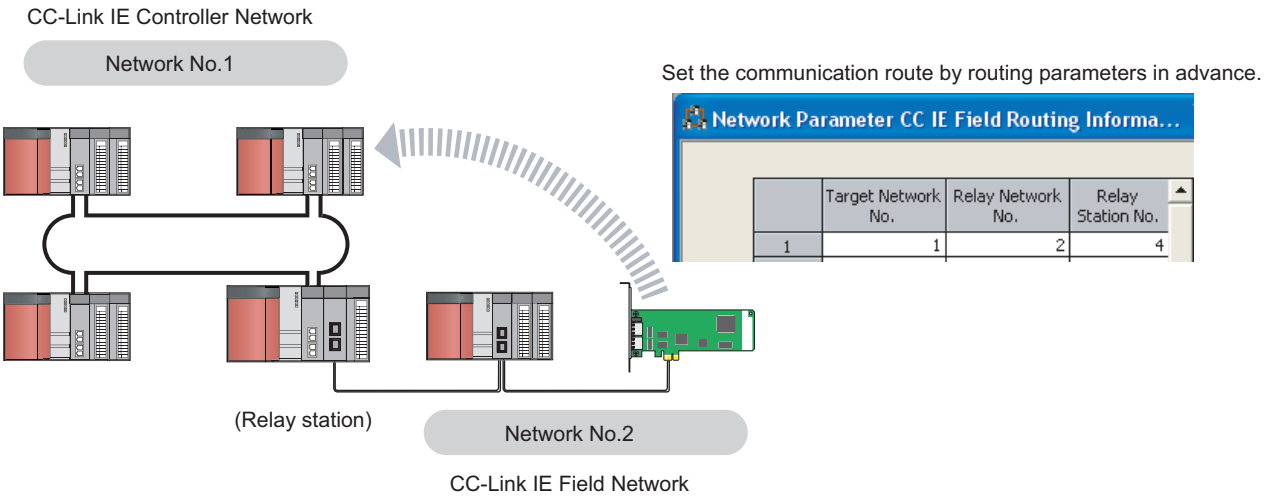
MELSEC Data Link Library Reference Manual

(2) Transient transmission range

It is possible to communicate with all stations on the network.

5.3.2 Communication with different networks

Setting the routing parameters in utility beforehand enables transient transmission to stations on different networks. Seamless communication is also possible with the CC-Link IE Controller Network, MELSECNET/H.

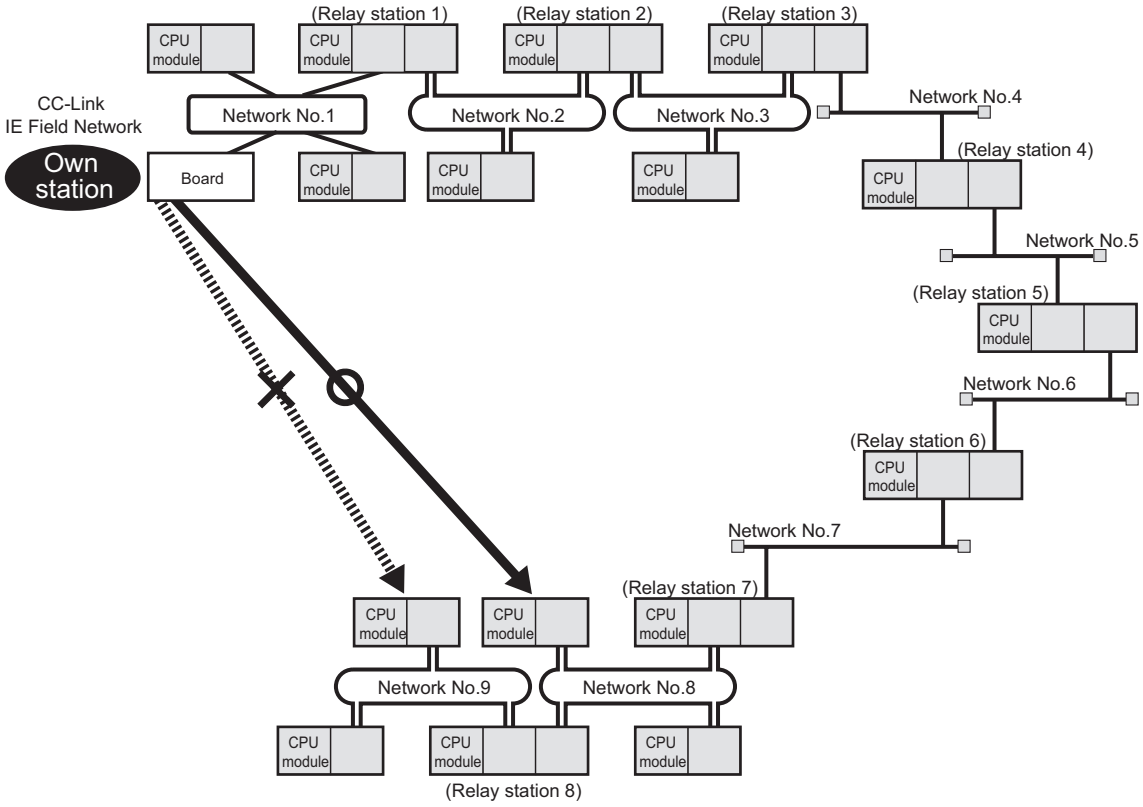


(1) Setting method

For Routing parameters, set on the "Setting the CC IE Field Routing Information" (☞ Page 121, Section 10.2.7)

(2) Transient transmission range

For Multiple network system, communication with a station on up to the eighth network is possible by setting routing parameters.



5.4 SEND/RECV Function

The SEND/RECV function sends/receives data to/from other station's programmable controller using the MELSEC data link library function. (☞ Page 164, CHAPTER 14)
This function supports the SEND/RECV instruction of link dedicated instruction.

Point

For CC-Link IE Field Network board with a serial number whose first five digits are '15102' or higher, install SW1DNC-CCIEF-B version 1.04E or later.
When using SW1DNC-CCIEF-B version 1.03D or earlier, one of the following error occurs in the SEND/RECV function and the function cannot be used.

- SEND function: Board driver I/F error :103 (0067H)
- RESV function: Timeout error :2 (0002H)

For an error occurred, refer to the following manual.
MELSEC Data Link Library Reference Manual

○:Applicable ×:Not applicable:

Serial number	Version of SW1DNC-CCIEF-B	
	1.03D or earlier	1.04E or later
'14052' or lower	○	○
'15102' or higher	×	○

(1) Channel (use for dedicated instruction)

A channel is an area of a CC-Link IE Field Network board where data handled by a SEND/RECV function is stored. By using multiple channels, it is possible to simultaneously access from the own station to other stations or concurrently read from and write to the same board.

(a) Number of channels

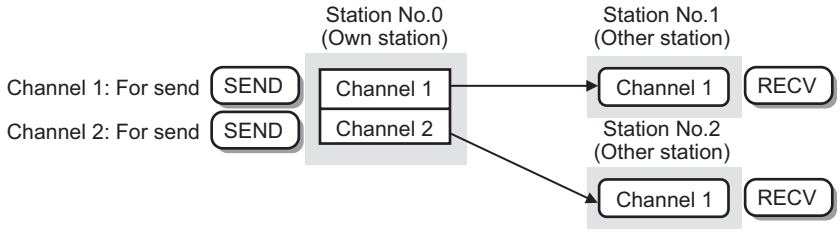
The CC-Link IE Field Network board has 2 channels that can be used for SEND/RECV function. By using 2 channels simultaneously, the sending and receiving of two data can be executed at the same time.

(b) Precautions

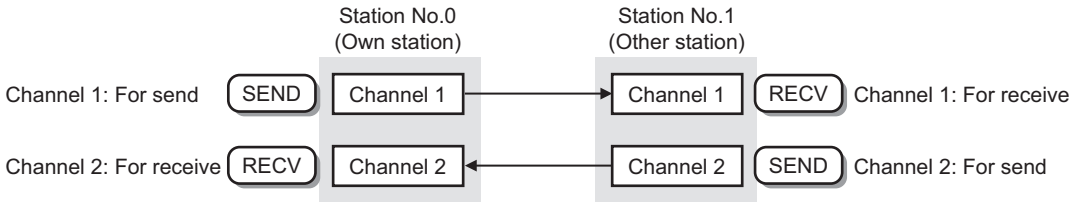
When executing the sending and receiving of multiple data simultaneously, make sure that the channels for the instructions are not duplicated. The sending and receiving for which the same channel is specified cannot be executed simultaneously. To use the same channel for multiple sending and receiving, execute one after completion of another.

(c) Example

- When accessing from the own station to multiple other stations simultaneously
  Change the channel used for the own station for each target station.

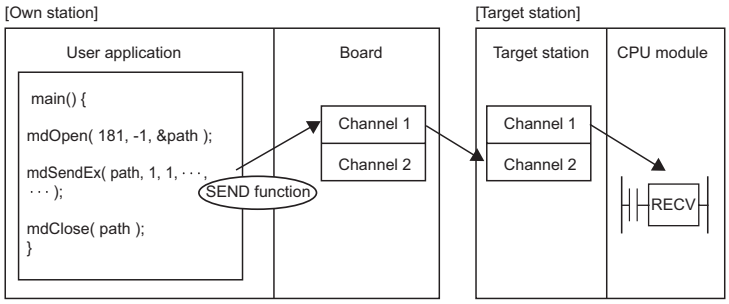


- When accessing mutually between the own station and another station
  Change the channel used for the own station for each sending and receiving of data.



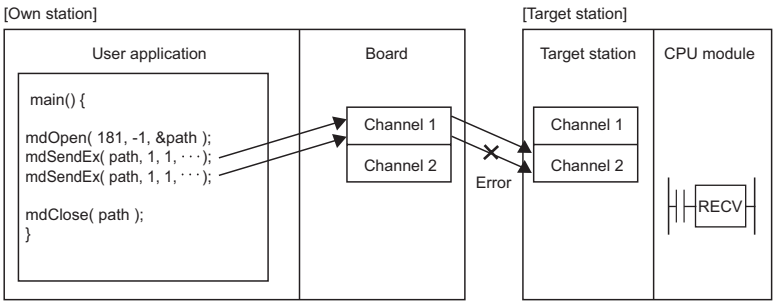
(2) SEND function

The SEND function sends data from the own station to the specified channel of the specified station using the mdSend/mdSendEx function of MELSEC data link library function.

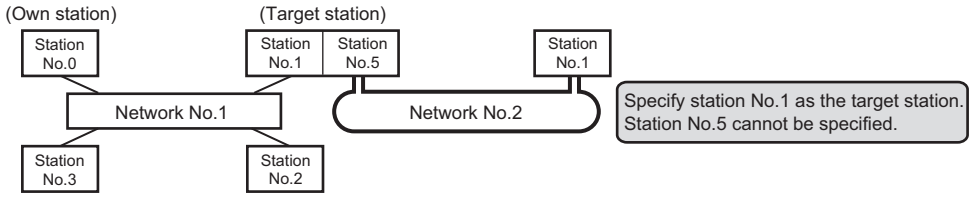


Point

- Sending data to the same channel of the target station
  Send the data after the target station has been read the specified channel data.
  An error will be occurred if sending the data to the same channel of the target station before reading the specified channel data.



- When the multiple network modules are mounted on the target station
  Specify the station number and network number of the network module which is received the request from the own station.
  The following example specifies the station number 1 of the network number 1. (The station number 5 of the network number 2 cannot be specified.

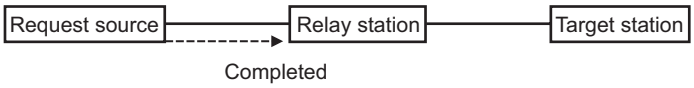


(a) Execution type

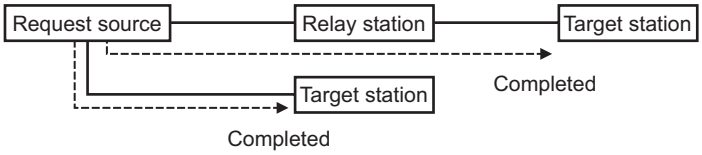
Two execution types, "with arrival confirmation" and "without arrival confirmation", are available for the SEND function. When sending data with "without arrival confirmation" execution type, "All stations" and "Group numbers" can be specified as target stations besides the station number.

- Without arrival confirmation (When the target station is on the same network)
  The process is completed when data is sent from the own station.

- Without arrival confirmation (When the target station is on another network)
  The process is completed when data arrives at the relay station on the same network.



- With arrival confirmation
  The process is completed when data is stored in the target station.



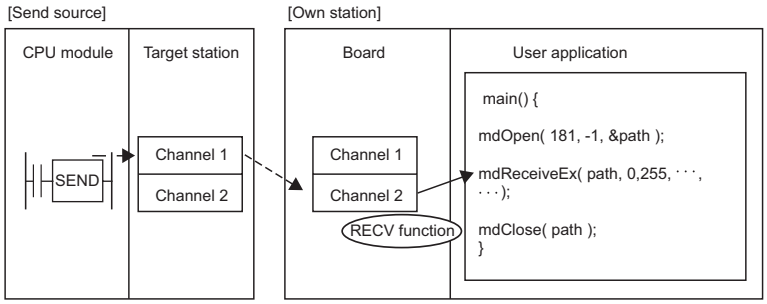
Remark

When "Without arrival confirmation" is specified, the result is regarded as normal on the own station even if the sending to the target station fails as follows.

- When communication ends normally even though sent data are abnormal
- When data cannot be stored in the target station, because data is sent to the same station from multiple stations

(3) RECV function

The RECV function reads data received by the board from the other station using the mdReceive/mdReceiveEx function of MELSEC data link library function.

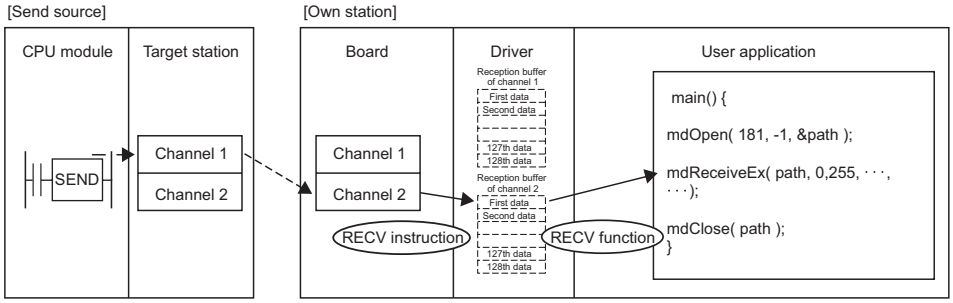


(a) Reception buffer of RECV function

Reception buffer of RECV function is a function in which a driver executes the RECV function automatically and received data are stored to reception buffers of each channel number in the driver.

Set the Reception buffer of RECV function in the "driver setting" of the network parameter. (☞ Page 119, Section 10.2.5)

- "Without setting"
  When the reception buffer is not set, the operation is the same as the RECV function of link dedicated instruction for CPU.
  This setting is used for detecting errors in sent data, whose execution type of the SEND function is set to "with arrival confirmation", at sending side.
- "With setting"
  When the reception buffer is set, the operation is the same as the RECV function for MELSECNET/H board or CC-Link IE Controller Network board.
  This setting is used for receiving data from multiple stations such as data sampling.



1) Messages received from other stations are stored to a storage channel of the target station specified in the send source.

2) A driver executes the RECV function automatically and received data are stored to reception buffers of each channel number in the driver.
A maximum of 128 reception data are stored to each reception buffer of each channel number in the driver.
When received data exceeds 128, the driver discards the received data automatically.

3) Using the mdReceiveEx/mdReceive function, data of the specified channel number are read from the reception buffer in the order they were received.

When the reception buffer is set, an error may occur under the following condition.

Condition	Description	Corrective action
Data are read immediately after the send data completion at the sending station.	When attempting data read by executing the mdReceive/mdReceiveEx function immediately after the send data completion at the sending station, "No reception data error" occurs because data have not yet been stored to the reception buffer of the driver.	• Retry it after a little while.
Data are sent consecutively from the sending station.	When attempting data send consecutively, "Channel busy (dedicated instruction) error" occurs at the sending station because the channel is being used by the driver and thus the sent data cannot be received.	• Retry it after a little while. • Change the storage channel of the target station.
Normally completed data at the sending side are discarded.	When 128 received data are stored to the reception buffer of each channel number, the 129th and the following received data are discarded by the driver after they are received by the board and before they are stored to the reception buffer. When the data, whose execution type is set to "with arrival confirmation", are sent from the sending side, a normal completion is established at the sending side because the board receives data once, however, data are discarded.	• Retry it after a little while.

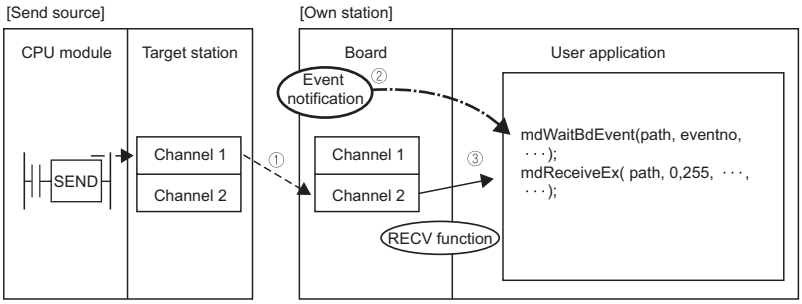
(b) Event notification

Events can be notified to a user program at the data reception.

The event notification is set in the event setting of the network parameter. (☞ Page 117, Section 10.2.4)

	Device Code	Device No.	Detection Method	Event Condition	Word Device Setting Value	Channel No.	Event No.
1	RECV Function		Edge Detect			1	0
2							

Received data can be obtained as events in a user program by specifying event numbers set in the event setting using the mdWaitBdEvent function. (The received data are read by executing the mdReceiveEx/ mdReceive function after the return of the mdWaitBdEvent function.)



1) Messages received from other stations are stored to a storage channel of the target station specified in the send source.
2) Specified events are notified and the mdWaitBdEvent function completes normally.
At this time, the received channel number is stored to the detailed event information of the mdWaitBdEvent function.
3) Data of channel number notified by the mdWaitBdEvent function are read from the reception buffer using the mdReceiveEx/mdReceive function.

Point

When setting the event notification function, set "Without setting" for Reception buffer of RECV function.

(c) Operational change according to the setting of the RECV function

• RECV execution request flag

The following table shows the RECV execution request flag status of link special relay according to each setting (☞ Page 224, Appendix 3) when receiving data from another station.

Reception buffer of RECV function	Event setting of channel that received data	RECV execution request flag when data from another station are received (SB0030, SB0031)
With setting	(Event setting is not applicable.)	No change
Without setting	With event setting	
	Without event setting	Flag turns ON

• When data are not received at the execution of mdReceiveEx/mdReceive function

The following table shows the operation status according to each setting when data are not received at the execution of mdReceiveEx/mdReceive function.

Reception buffer of RECV function	Event setting of channel that received data	Operation status of mdReceiveEx/mdReceive function
With setting	(Event setting is not applicable.)	The function ends with an error. (No reception data error)
Without setting	With event setting	
	Without event setting	The function waits for up to the time specified for "Transient timeout monitoring time". (☞ Page 119, Section 10.2.5) When data are received: The function ends normally. When data are not received: The function ends with an error. (Response timer timeout (dedicated instruction))

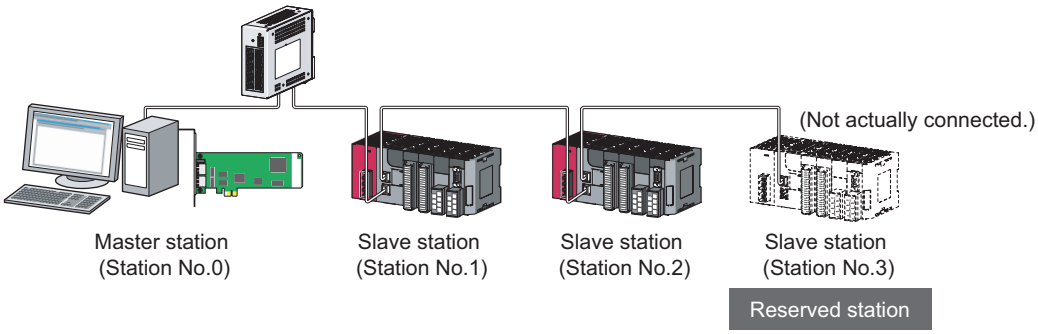
5.5 Reserved Station Specification and Reserved Station Function Disable Function

Reserved station specification allows setting of a station that is not actually connected at present but will be connected to the network in the future (must be included in the total number of stations for the network). Reserved stations are not detected as error stations even though they are not actually connected.
When the reserved station function is disabled, a slave station specified as a reserved station can be canceled temporarily.

(1) Reserved station specification

A slave station can be specified as a reserved station in the "Network Configuration Setting".

(☞ Page 112, Section 10.2.2)



Network Configuration Setting

Number of PLCs	Station No.	Station Type	RX/RY Setting			RWw/RWr Setting			Reserved/Error Invalid Station
			Points	Start	End	Points	Start	End	
1	1	Local Station	16	0000	000F	8	0000	0007	No Setting
2	2	Intelligent Device Station	16	0010	001F	8	0008	000F	No Setting
3	3	Intelligent Device Station	16	0020	002F	8	0010	001	Reserved Station

Select "Reserved Station".

(2) Reserved station function disable and cancel

This is used when connecting a reserved-status slave station to the network.

Reserved station function disable and cancel is set on “Reserved Station Function Enable”screen.

(☞Page 161, Section 13.2.7)

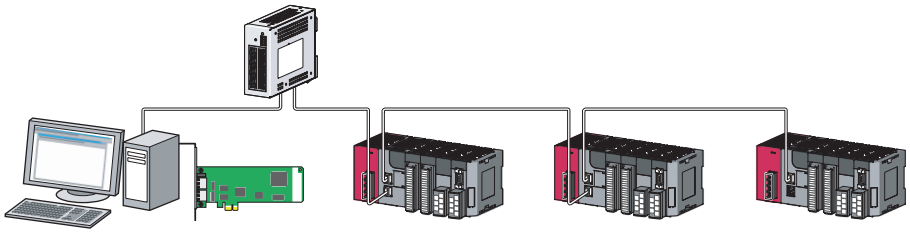
5.6 Error Invalid Station and Temporary Error Invalid Station Setting Function

When a slave station is set as an error invalid station, even if it is disconnected from the network during data link, the master station will not detect it as error station.
Furthermore, by the temporary error invalid station setting function, a slave station can be temporarily set as an error invalid station.

(1) Error invalid station setting

A slave station can be set as an error invalid station in "Network Configuration Setting".

(☞ Page 112, Section 10.2.2)



No data link error will be detected on this station even in the case of an error or power OFF.

Network Configuration Setting

Number of PLCs	Station No.	Station Type	RX/RY Setting			RWw/RWr Setting			Reserved/Error Invalid Station
			Points	Start	End	Points	Start	End	
1	1	Local Station	16	0000	000F	8	0000	0007	No Setting
2	2	Intelligent Device Station	16	0010	001F	8	0008	000F	No Setting
3	3	Intelligent Device Station	16	0020	002F	8	0010	0017	Invalid Station

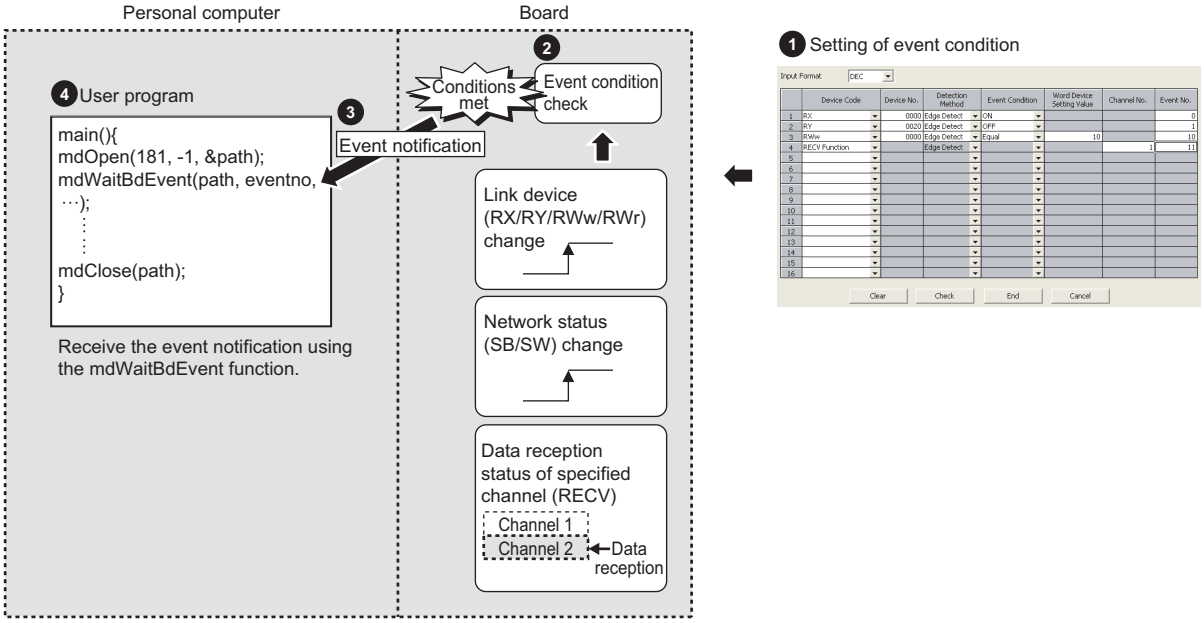
Select "Invalid Station".

(2) Temporary error invalid station

This function is useful for various operations such as replacing a slave station during a data link by temporarily setting it as an error invalid station. For details, refer to ☞Page 162, Section 13.2.8.

5.7 Event Function

This function checks event conditions every link scan, and notifies events to the user program when the event conditions are met.
By using this function, the link devices can be monitored efficiently without reading link devices regularly by the user program.



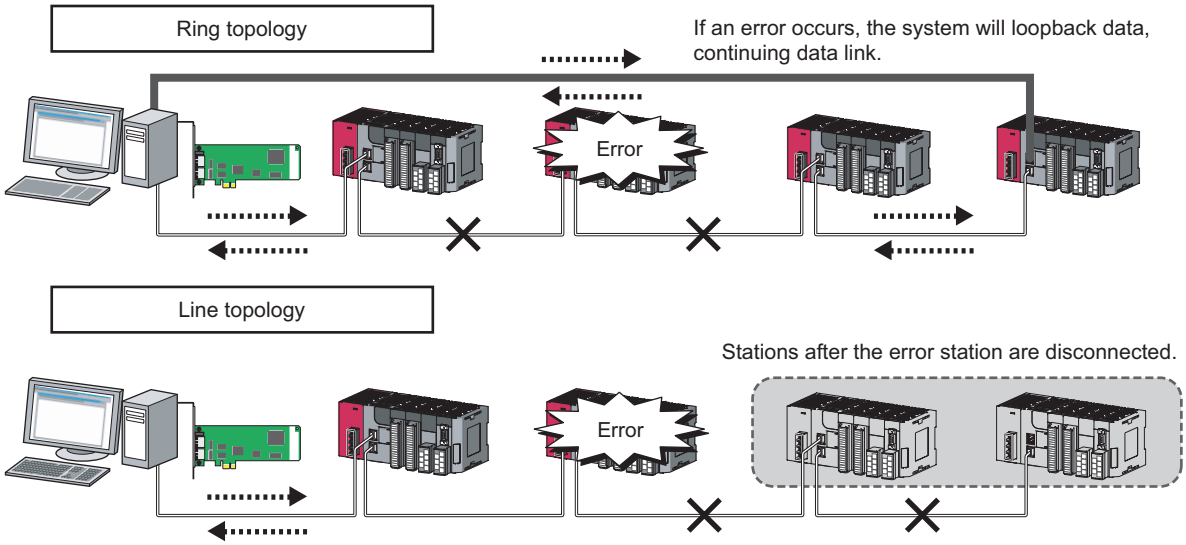
1. Set the event condition.
2. Link devices set for the event condition are checked every link scan.
3. When the event conditions are met, an event notification is issued every link refresh cycle. (☞ Page 119, Section 10.2.5)
4. Receive the event notification using the mdWaitBdEvent function in the user program.

(1) Setting method

Event conditions are set on the "Event setting" screen. (☞ Page 117, Section 10.2.4)
Specify event numbers set by the mdWaitBdEvent function of MELSEC data link library.

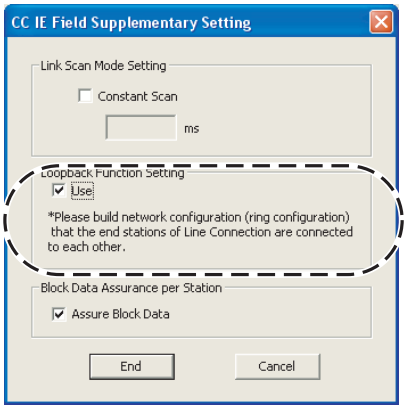
5.8 Loopback Function

This function disconnects the station in which an error has occurred from the network and continues data link with the stations that are operating normally. Stations connected after the faulty station can also continue data link.


Ring topology
If an error occurs, the system will loopback data, continuing data link.
Error
Line topology
Stations after the error station are disconnected.
Error

(1) Setting procedure

Configure the network in ring topology and set "Use" for "Loopback Function Setting" on the "Supplementary Setting" screen in "Network Configuration Setting". (☞ Page 114, Section 10.2.2 (1)).


CC IE Field Supplementary Setting
Link Scan Mode Setting
Constant Scan
ms
Loopback Function Setting
Use
*Please build network configuration (ring configuration) that the end stations of Line Connection are connected to each other.
Block Data Assurance per Station
Assure Block Data
End
Cancel

Select the check box.

(2) Precautions

For network topology other than ring topology, clear the check box.

If the loopback function setting and the network configuration are inconsistent, an error may occur in all stations and data link cannot be performed.

Remark

Whether loopback is being performed or not can be checked by link special relay (SB) and link special register (SW) for the master station.

(☞ Page 224, Appendix 3, Page 236, Appendix 4)

5.9 Driver WDT function

Driver WDT function monitors the operation of the software (operating system, driver)inside the hardware by the timer function on CC-Link IE Field Network board.
When the driver cannot reset the timer of the board within the specified driver WDT monitoring time, CC-Link IE Field Network board detects driver WDT error.
Driver WDT function detects driver operation delay due to the access error from the driver to CC-Link IE Field Network board or system high load.

(1) Driver WDT settings

For the setting methods, refer to the following section.
☞ Page 119, Section 10.2.5

Remark

The driver WDT function is set to invalid as a default.

(2) When the driver WDT error has occurred

The following shows the operation when driver WDT error has occurred.

(a) CC-Link IE Field Network board and the driver stop communication and are disconnected from the network in order to avoid an erroneous output.
When the Driver WDT function confirmed the CC-Link IE Field Network board in which a driver WDT error is occurred from other station, a CPU stop error occurs.

(b) RUN LED flicks and RD LED turns ON on the CC-Link IE Field Network board.

(c) "-28158 (9202H) Driver WDT error" occurs when accessing CC-Link IE Field Network board from the application program in which the CC IE Field Utility and MELSEC data link library function are used.

Point

- When the multiple applications in which MELSEC data link library is used are executed, driver WDT error is returned to all the programs. However, only the CC-Link IE Field Network board in which the driver WDT error has occurred is recognized as an error station on the network.
  When using driver WDT function, set the monitoring timer considering the margin of the personal computer load.
- For the troubleshooting, refer to the following chapter.
  ☞ Page 166, CHAPTER 16

CHAPTER 6 INSTALLING AND UNINSTALLING SOFTWARE PACKAGES

This chapter explains the software package installation and uninstallation.

6.1 Installation and Uninstallation Precautions

The following are the precautions when installing and uninstalling the software package.

- Log on as a user having administrator authority.
- Make sure to close other applications running on Windows® (including resident software such as antivirus software) before installation and uninstallation.
- The installer may not work normally because the update program of operating system or other companies' software such as Windows® Update and Java update may start automatically. Please install the driver after changing the setting of the update program not to start automatically.
- Check if the display settings on the [Device Manager] or other relevant functions are correct, then install an appropriate display driver, or update the Windows® operating system.
- The language switching function of the operation system set by "Regional and Language Options" on the Control Panel screen is not supported. The installation or uninstallation may not work normally if the language setting is changed.
- When using Windows Server 2012 or Windows 8, .NET Framework 3.5 is required.
  Enable the .NET Framework 3.5 (including .NET 2.0 or 3.0) in "Turn Windows features on or off" on the control panel.
- A network drive cannot be specified as the installation destination.

6.2 Installation

The following explains a procedure for installing the software package.

(1) Installation

1. **Insert the CD-ROM to the CD-ROM drive.**
2. **Double-click the "Setup.exe" file on the CD-ROM.**
3. **By following the on-screen instructions, select or enter the necessary information.**
   (When the corrective action displayed on the screen is not effective, ☞ Page 170, Section 16.2.3)
4. **Restart the perdonal computer.**

(2) When installation is completed normally

When the installation is completed normally, the following utilities are registered.

(a) Utility

When the installation is completed normally, the utilities shown below are registered in the "Start"*1 of Windows®.

*1 : [Start] - [All App] or [Start] - [All programs]

Folder	Utility name	Description
[MELSEC]- [CC IE Field Board]	CC IE Field Utility	Utility to setting board and displaying status.
[MELSEC]	Device Monitor Utility	Utility to monitoring devices and changing the device value.

(b) MELSEC Data Link Library

MELSEC data link library is used for the following software packages in common.
When the utilities are installed on the same personal computer, the newer MELSEC data link library of the software package is enabled.
When the installation is completed normally, the manual of MELSEC data link library is registered in the [MELSEC] folder as the same folder as the utility.

Point

- In order to view the manuals, Adobe Reader is required.
  Adobe Reader can be downloaded from the Adobe Systems Incorporated web site.duct.
- When using 64-bit version operating system, the icon may not be displayed even when Adobe Reader is installed.

Software package	Version	Manual name*1
SW0DNC-NETH-B	22Y or earlier	MELSEC Data Link Function HELP
	23Z or later	MELSEC Data Link Library Reference Manual
SW1DNC-CCBD2-B	1.10L or earlier	MELSEC Data Link Function HELP
	1.11M or later	MELSEC Data Link Library Reference Manual
SW1DNC-NETG-B	1.11M or earlier	MELSEC Data Link Function HELP
	1.12N or later	MELSEC Data Link Library Reference Manual
SW1DNC-CCIEF-J	1.00A	MELSEC Data Link Library Programmer's Reference
SW1DNC-CCIEF-B	1.00A	MELSEC Data Link Library Programmer's Reference
	1.02C or later	MELSEC Data Link Library Reference Manual*2

*1 : Depending on the installation of other software packages, the manuals shown above are also displayed. In this case, select the following manual.
📖 MELSEC Data Link Library Reference Manual

*2 : When SW1DNC-CCIEF-B Version 1.02C or later is installed, MELSEC Data Link Library Programmer's Reference is deleted.

(c) Driver

When installing the board on the personal computer after the installation of the software package, the driver is installed automatically.*1

*1 : For Windows XP® and Windows Server 2003® R2, the driver is required to be specified on the "Found New Hardware Wizard" screen.
☞ Page 173, Section 16.2.4

When the driver installation is completed normally, the following driver is displayed on the Device Manager screen of Windows®.

Device name	Driver name
MELSEC CC-Link IE Field Device	MELSEC CC-Link IE Field Controller

(d) Service application

To prevent a personal computer entering the power save mode (hibernate, sleep), MELSECPowerManager is installed automatically under the specific operating system.
For details of MELSECPowerManager , refer to the following section.
☞ Page 271, Appendix 13

(3) When installation is aborted or failed

When the installation is aborted or failed, take corrective actions following the troubleshooting. (☞ Page 169, Section 16.2.1)

6.3 Uninstallation

This section explains a procedure for uninstalling the software package.

(1) Uninstallation procedure

1. **Uninstall the software package from the control panel screen of Windows® .**

Point

- If a screen confirming the deletion of common files appears at uninstallation
  Select "No to All".
  If deleting common files, other applications may not operate normally.
- If a screen confirming the execution of restart appears at the completion of uninstallation
  Select "Yes, I want to restart my computer now.", and restart the personal computer.
- MELSECPowerManager may not be uninstalled depending on the installation state which affects the other installed software packages.
  For details of MELSECPowerManager, refer to the following appendix.
  ☞ Page 271, Appendix 13

(2) When uninstallation is completed normally

When the uninstallation is completed normally, the icons registered in the Windows® Start are deleted.

(3) When uninstallation is failed

When the uninstallation is failed, take corrective actions following the troubleshooting. (☞ Page 169, Section 16.2.2)

CHAPTER 7 OVERVIEW OF CC IE FIELD UTILITY

CC IE Field Utility is software to display settings and status of the CC-Link IE Field Network board. (For installing and uninstalling the utility, ☞ Page 87, CHAPTER 6)

7.1 Overview

Use CC IE Field Utility to perform the following functions.

Item		Description	Menu	Reference
Test before wiring	Bus I/F test	Check the hardware of the Bus I/F function of the CC-Link IE Field Network board.	[Diagnostics] ⇨ [Board Diagnostics]	Page 51, Section 4.5.1
	Memory test	Check the memory of the CC-Link IE Field Network board.		Page 52, Section 4.5.2
	H/W test	Check the hardware in the CC-Link IE Field Network board.		Page 52, Section 4.5.3
	Self-loopback test	Test the hardware of the CC-Link IE Field Network board alone, including the send/receive circuit of the transmission system and cables.		Page 53, Section 4.5.4
Setting	Parameter Setting	Set the network parameters.	[View] ⇨ [Network Parameter]	Page 109, CHAPTER 10
			[Online] ⇨ [Read from Board]/ [Write to Board]	Page 125, Section 11.2
	Channel number setting	Set channel numbers of the CC-Link IE Field Network board.	[Online] ⇨ [Channel No. Setting]	Page 124, Section 11.1
Test after wiring	Loop test	Check the line status in the network system and parameter setting status of each station.	[Diagnostics] ⇨ [Board Diagnostics]	Page 58, Section 4.7.1
	Cable test	Check disconnections and incomplete connections of Ethernet cables.	[Diagnostics] ⇨ [CC IE Field Diagnostics]	Page 60, Section 4.7.2
	Communication test	Check whether the communication route of the transient transmission from the own station to a communication target is correct.		Page 61, Section 4.7.3
Monitor/ Debug	Device monitor	Start Device Monitor Utility and monitor devices.	[Online] ⇨ [Device Monitor Utility]	Page 128, CHAPTER 12
	CC-Link IE Field Network diagnostics	Check error locations, error causes, and event histories.	[Diagnostics] ⇨ [CC IE Field Diagnostics]	Page 144, Section 13.2
	Reset operation	Reset the board.	[Online] ⇨ [Reset Operation]	Page 127, Section 11.4

7.2 Menu List

This section explains functions of CC IE Field Utility.

Project		Reference
New	Create a new project.	Page 101, Section 9.1
Open	Open an existing project.	Page 102, Section 9.2
Close	Close an open project.	Page 107, Section 9.6
Save	Save a project.	Page 103, Section 9.3
Save As	Name and saves a project.	
Compress/Unpack		Page 105, Section 9.4
Compress	Compress and saves a project.	
Unpack	Unpack a compressed project.	
Delete	Delete an existing project.	Page 107, Section 9.5
Verify	Verifying data of an open project and data of another project.	Page 108, Section 9.7
(The latest file 1 to 4)	Display the recently used CC IE Field Utility project paths and opens the selected project.	-
Exit	Exit CC IE Field Utility.	Page 94, Section 8.1

Edit		Reference
Cut	Cut the selected data.	-
Copy	Copy the selected data.	
Paste	Paste the cut or copied data at the cursor position.	

View		Reference
Network Parameter	Set the network parameters.	Page 109, CHAPTER 10
Toolbar		Page 96, Section 8.2.2
(Toolbar name)	Display/hide the toolbar.	

Online		Reference
Channel No. Setting	Display/change board channel numbers.	Page 124, Section 11.1
Read from Board	Read parameters from the board.	Page 125, Section 11.2
Write to Board	Write parameters to the board.	
Verify Board	Verify parameters set to the board and parameters of open project.	Page 126, Section 11.3
Reset Operation	Reset the board.	Page 127, Section 11.4
Device Monitor Utility	Start Device Monitor Utility.	Page 128, CHAPTER 12

Diagnostics		Reference
Board Diagnostics	Diagnose the operating status of the board.	Page 142, Section 13.1
CC IE Field Diagnostics	Diagnose the CC-Link IE Field Network.	Page 144, Section 13.2

Window		Reference
Cascade	Tile windows in overlapping display.	-
Tile Vertically	Tile windows vertically	
Tile Horizontally	Tile windows horizontally.	
Arrange Icons	Arrange the icons at the bottom of the window.	
Close All	Close all open windows.	
(Switch to other window)	Display the open window.	
Window	Display a list of open windows. Also open or arrange specified windows.	Page 98, Section 8.2.3

Help		Reference
Manual	Display the manual.	Page 100, Section 8.3
About	Display product information such as the version.	

CHAPTER 8 SCREEN CONFIGURATION AND BASIC OPERATIONS

This chapter explains the screen configuration and basic operations of CC IE Field Utility.

8.1 Starting and Exiting

This section explains the operation methods for starting and exiting CC IE Field Utility.

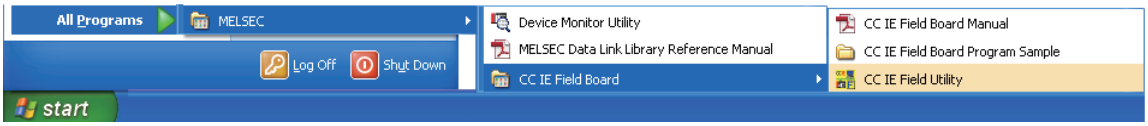
(1) Starting up

Start up CC IE Field Utility.

Operating procedure

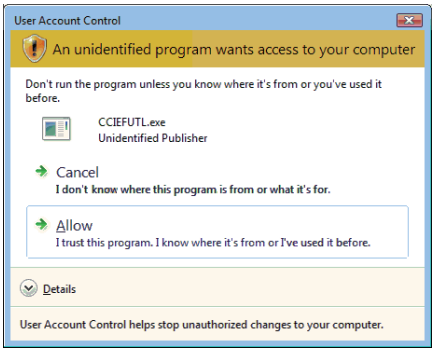
1. **Select [MELSEC] ⇨ [CC IE Field Board] ⇨ [CC IE Field Utility] from "Start" of Windows®*1.**

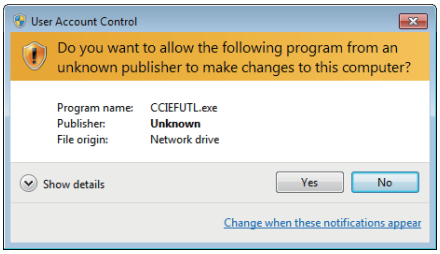
*1 : [Start screen] - [All apps] or [Start] - [All Programs]



Point

- Starting CC IE Field Utility with the validated user account control
  When CC IE Field Utility is started while user account control (UAC) is validated, the following warning screen is displayed. Click the "Allow" or Yes button to start the utility.


User Account Control
An unidentified program wants access to your computer
Don't run the program unless you know where it's from or you've used it before.
CCIEFUTL.exe
Unidentified Publisher
Cancel
I don't know where this program is from or what it's for.
Allow
I trust this program. I know where it's from or I've used it before.
Details
User Account Control helps stop unauthorized changes to your computer.


User Account Control
Do you want to allow the following program from an unknown publisher to make changes to this computer?
Program name: CCIEFUTL.exe
Publisher: Unknown
File origin: Network drive
Show details
Yes
No
Change when these notifications appear

For details on how to prevent this screen from being displayed, refer to Page 261, Appendix 11.

(2) Exiting

Exit CC IE Field Utility.

Operating procedure

1. **[Project] ⇨ [Exit]**

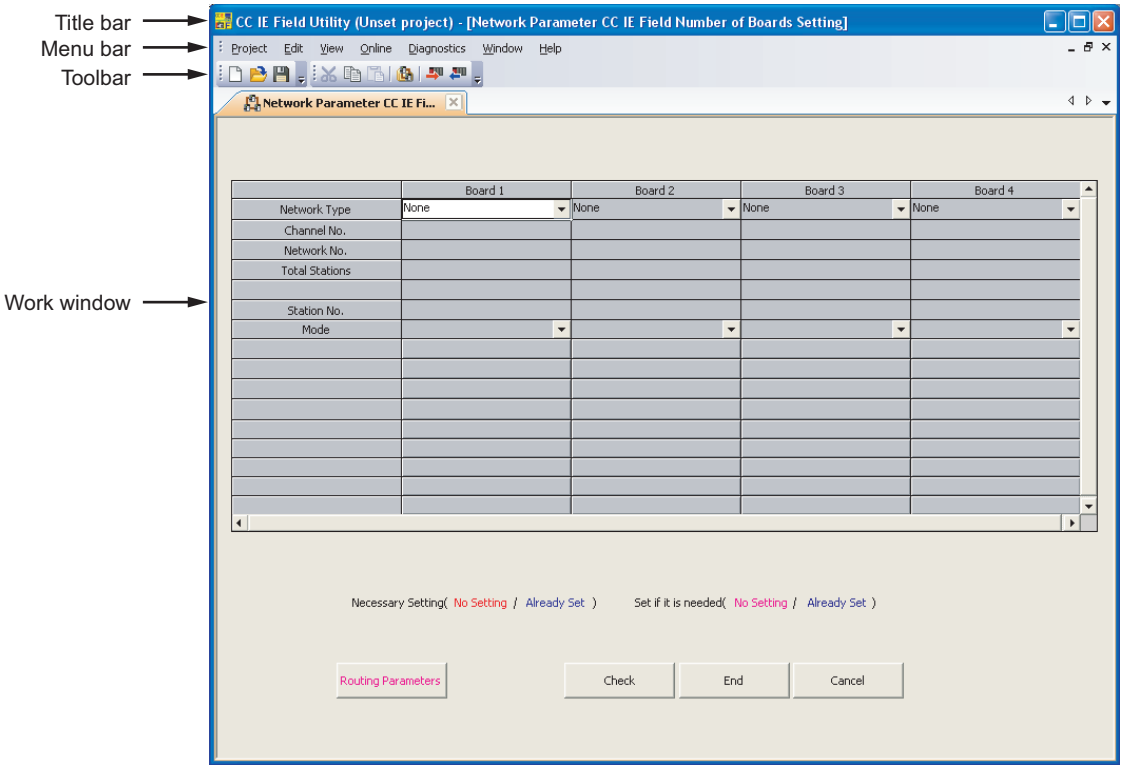
8.2 Screen Configuration and Basic Operations

This section explains the main frame (basic screen) of CC IE Field Utility that is displayed when it is started up.

8.2.1 Main frame configuration

The following shows a main frame configuration.

Screen display



Display contents

Name	Description	Reference
Title bar	Display a project name	-
Menu bar	Display menu options for executing each function.	-
Toolbar	Display tool buttons for executing each function.	Page 96, Section 8.2.2
Work window	A main screen used for operations such as parameter setting, and monitoring	Page 98, Section 8.2.3

8.2.2 Toolbars

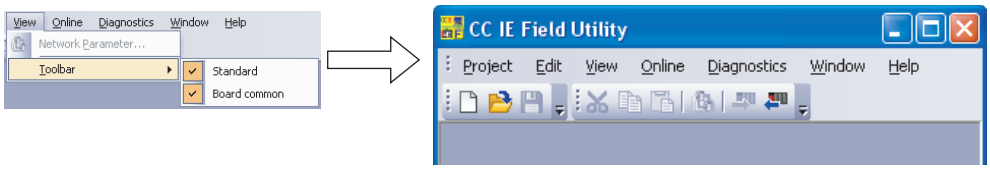
A toolbar is a block of on-screen buttons for executing frequently-used functions included in a menu.
The toolbars to be displayed and their display positions on the screen can be set by the user.

(1) Displaying/hiding toolbars

Select a toolbar to be displayed.

Operating procedure

1. **[View] ⇨ [Toolbar] ⇨ [(toolbar name)]**
   The selected toolbar is displayed on the screen.



(2) Docking/floating toolbars

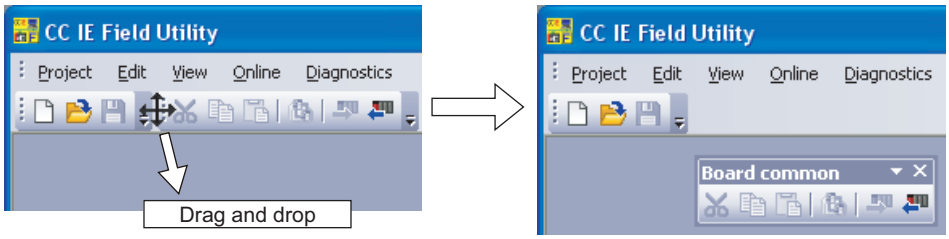
Switch the display format (docking/floating) of a toolbar.

(a) Floating a toolbar

Display a toolbar floating from the main frame.

Operating procedure

1. **Drag a docked toolbar to the desired position for floating display.**

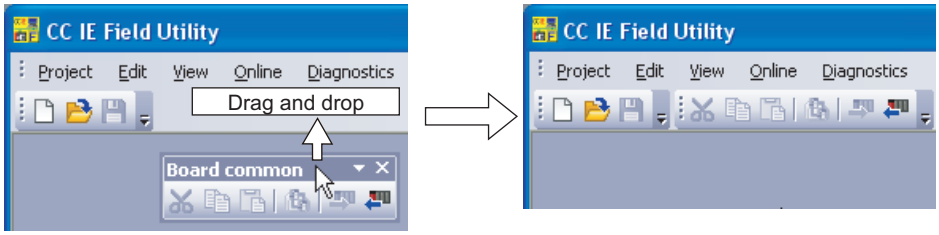


(b) Docking

Display a toolbar docked to the main frame.

Operating procedure

1. **Drag the title bar of a floating toolbar and drop it in the main frame.**



Point

- Method for docking a toolbar at the original position
  To dock a floating toolbar back at the original position, double-click on the title bar of the toolbar.

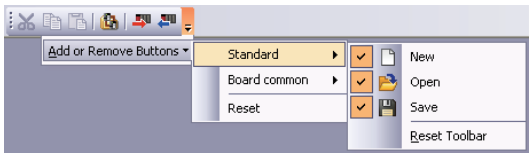
(3) Customizing toolbars

This function sets the types of tool buttons to be displayed in each toolbar.

Operating procedure

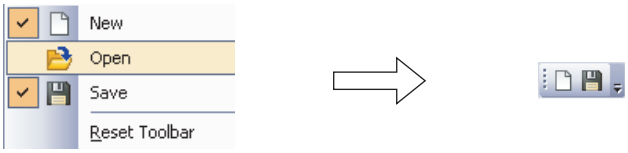
1. **Toolbar options button ( ) ⇨ [Add or Remove Buttons].**

A list of tool buttons is displayed.



2. **Check the check box in front of the tool button to be displayed on the screen.**

The checked tool buttons are displayed on the screen.

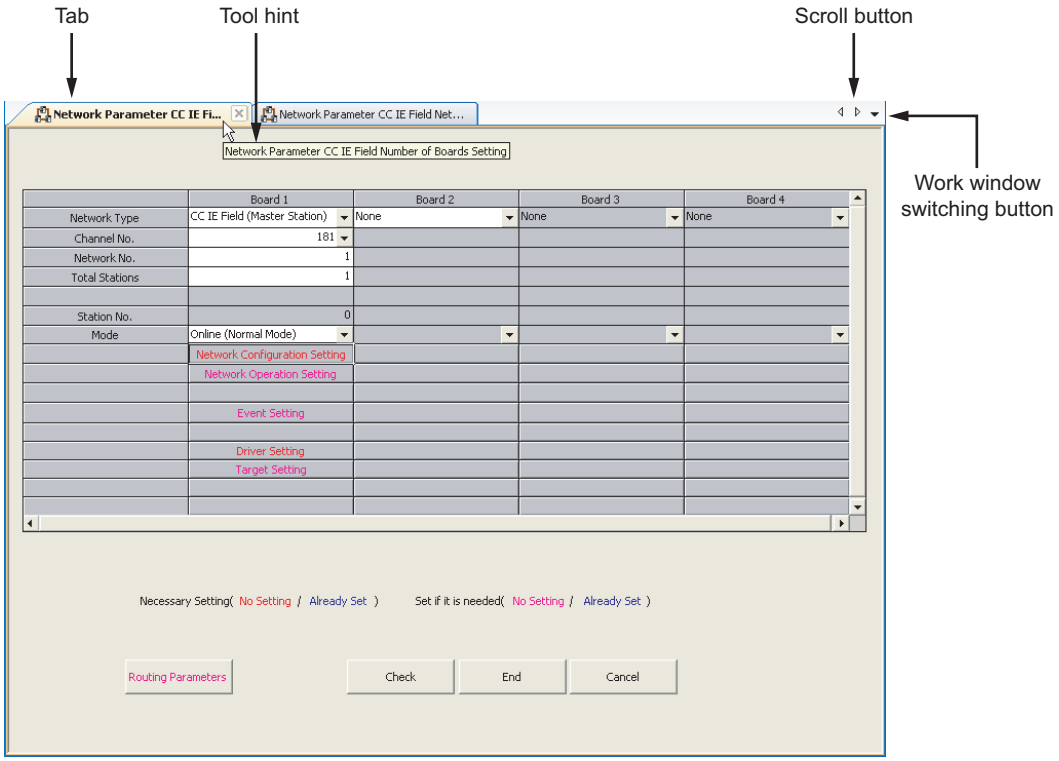


The toolbar configuration returns to the default when [Reset Toolbar] is selected.

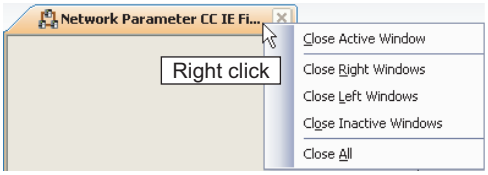
8.2.3 Work windows

A work window is a main screen used for operations such as parameter setting and monitoring in CC IE Field Utility.

Screen display



Display contents

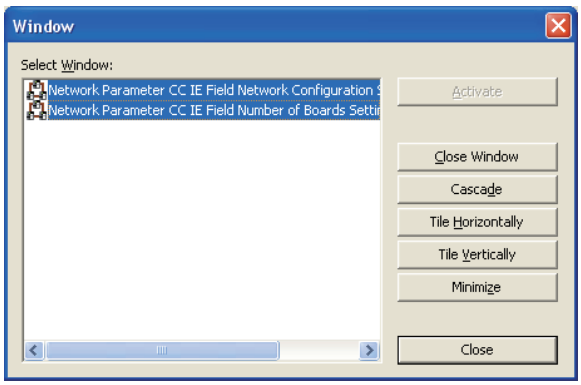
Item	Description
Tab	Become active when selected. The tab order can be changed by dragging and dropping tabs. The window(s) can be closed from the menu displayed by right-clicking the tab. In the other way, the active window can be closed by clicking on the tab. 
Tool hint	Display a brief explanation when the cursor is moved onto the selected tab.
Scroll button	Scroll the tab display to the left and right. Display hidden tabs.
Work window switching button	Display a list of windows being displayed. Select a data name displayed on the list to display its corresponding window on the top.
Display windows	Display screens such as the "Network Parameter Setting the Number of CC IE Field Cards" screen.

(1) Arranging/displaying windows

This function displays a list of open windows, and also opens and arranges specified windows.
This function is useful to display the desired window efficiently when multiple windows are open.

Display contents

[Window] ⇨ [Window]



8.3 Help Function

(1) Displaying manuals

Display the manual of the CC-Link IE Field Network board.

Operating procedure

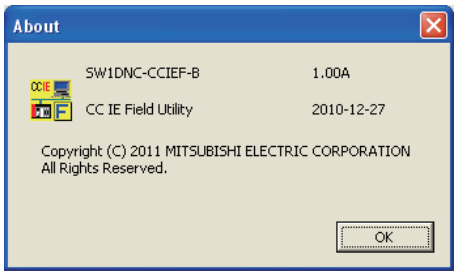
1. **[Help] ⇨ [Manual]**

(2) Checking version of CC IE Field Utility

Display information such as the software version of CC IE Field Utility.

Operating procedure

1. **[Help] ⇨ [About]**



CHAPTER 9 PROJECT MANAGEMENT

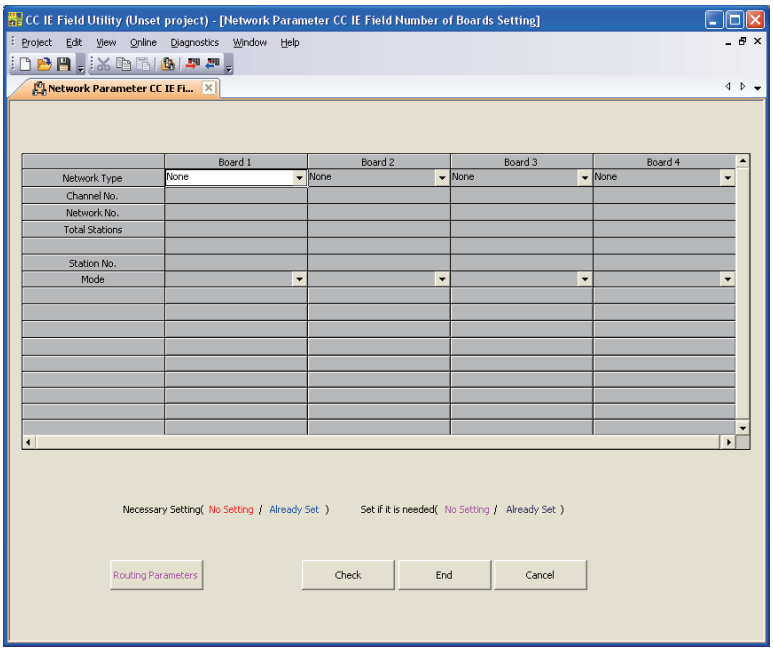
This chapter explains basic operations of CC IE Field Utility such as creating, opening, and saving projects.

9.1 Creating Projects

Create a new project.

Screen display

[Project] ⇨ **[New]**



Point

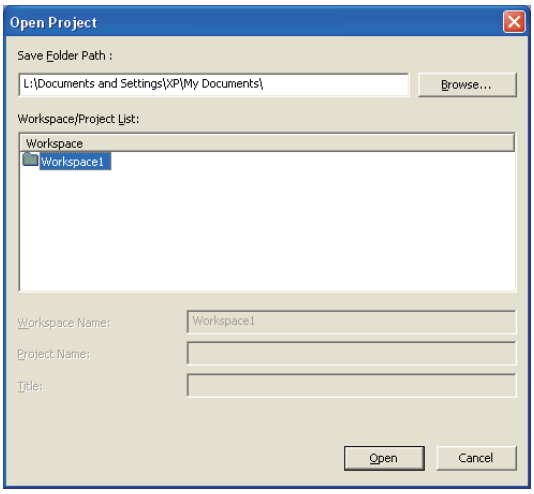
- Creating a new project with data read from the board
  A new project is created with the data read from the CC-Link IE Field Network board when data are read from the board before creating a new project. (For reading data from board Page 125, Section 11.2)
- A note on creating a new project
  Do not change the storage location or file name of created workspace or project folder/file using an application such as Windows® Explorer.

9.2 Opening Existing Projects

Read a project saved in a hard disk or other memory media of a personal computer

Screen display

[Project] ⇨ [Open]



Operating procedure

1. Set the items on the screen.

Item	Description
Save Folder Path	Enter the folder (drive/path) where the workspace is saved. The folder can be selected in the "Browse For Folder" screen by clicking the Browse... button.
Workspace/Project List	Select a workspace. The display is switched to the project list by double-clicking "Workspace".
Workspace Name	Display the selected workspace name.
Project Name	Display the selected project name.
Title	Display the title of the selected project.

2. Click the Open button.

The specified project is displayed.

Screen button

- Browse... button

  Displays the "Browse For Folder" screen.

Point

- Workspace

  A workspace is a folder of CC IE Field Utility dedicated to manage multiple projects under the same name.

  Do not change the workspace configuration using an application such as Windows® Explorer.

- Network drive display on the "Browse For Folder" screen

  When the network drive display is not displayed, log on to Windows® as a user who has an access authority to the assigned folder.

9.3 Saving Projects

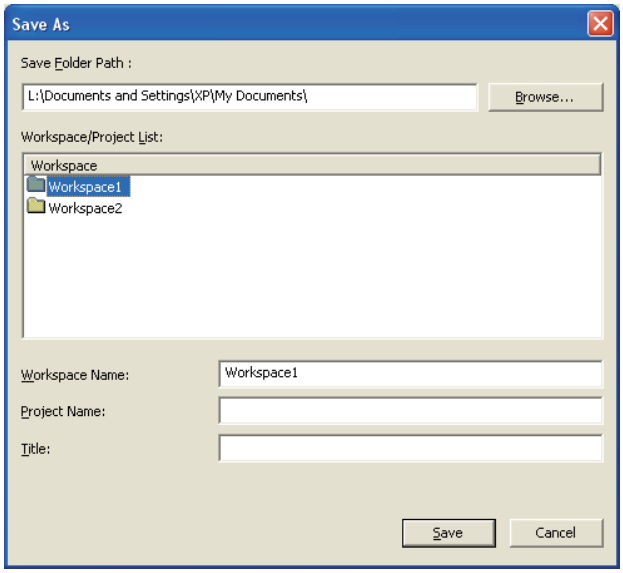
Save a project in a hard disk or other memory media of a personal computer.

(1) Saving projects under the specified name

Save the open project under the specified name.

Screen display

[Project] ⇨ [Save As]



Operating procedure

1. **Set the items on the screen.**

Item	Description
Save Folder Path	Enter the folder (drive/path) where the workspace is saved. The folder can be selected in the "Browse For Folder" screen by clicking the Browse... button.
Workspace/Project List	Select a workspace. The display is switched to the project list by double-clicking "Workspace".
Workspace Name	Enter the workspace name.
Project Name	Enter the project name.
Title	Enter the title of the project.

2. **Click the Save button.**

The project is saved in the specified folder under the specified workspace name, project name, and title.

Point

- Workspace
  A workspace is a folder of CC IE Field Utility dedicated to manage multiple projects under the same name.
  Do not change the workspace configuration using an application such as Windows® Explorer.
- Saving projects in an existing destination
  When saving a project in an existing destination (workspace or project), the destination folder can be selected from the "Workspace/Project List".
- Number of characters used for workspace name, project name, and title
  Enter each workspace name, project name, and title within 128 characters.
  Note, however, that the total number of characters used for the workspace folder path, workspace name, and project name should not exceed 150 characters.
- Network drive display on the "Browse For Folder" screen
  When the network drive display is not displayed, log on to Windows® as a user who has an access authority to the assigned folder.

(2) Saving projects

Overwrite and save the project being edited.

Operating procedure

1. **[Project]** ⇨ **[Save]**

The existing project data are overwritten.

9.4 Saving Projects with Compression and Unpacking Projects

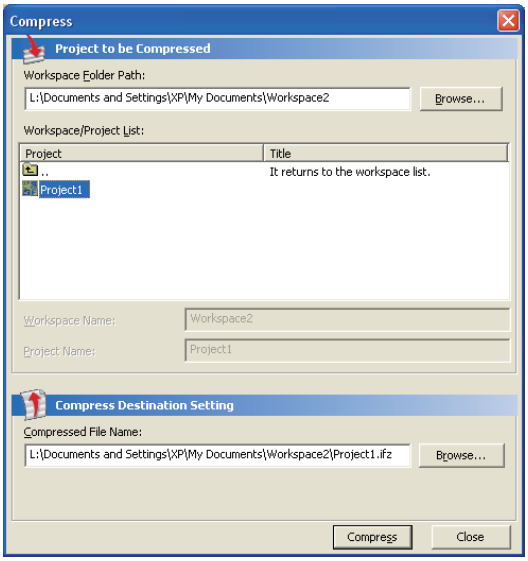
This section explains the methods for saving projects with compression, and unpacking projects saved with compression.
This function gives easier project data passes.
This function is not compatible with commercially available file compression and decompression tools.

(1) Saving projects with compression

Save a desired project with compression.

Screen display

[Project] ⇨ [Compress/Unpack] ⇨ [Compress]



Operating procedure

1. **Set the items on the screen.**

Item		Description
Project to be Compressed		-
	Workspace Folder Path	Enter the folder (drive/path) where the workspace is saved. The folder can be selected in the "Browse For Folder" screen by clicking the Browse... button.
	Workspace/Project List	Select a workspace and a project.
	Workspace Name	Display the selected workspace name.
	Project Name	Display the selected project name.
Compress Destination Setting		-
	Compressed File Name	Enter the folder where the compressed file is saved and the compressed file name. The compressed file name can be specified in the "Compressed File Name" screen by clicking the Browse... button.

2. **Click the Compress button.**

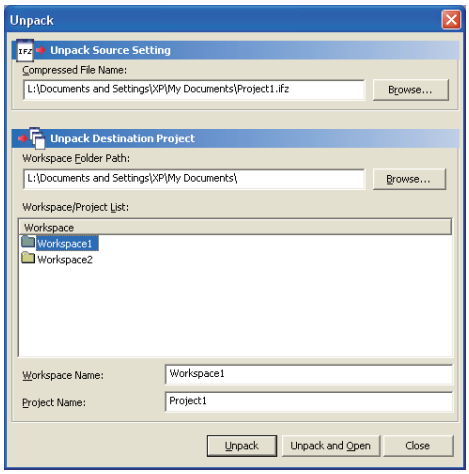
The compressed project file (*.ifz) is saved in the specified folder.

(2) Unpacking projects saved with compression

Unpack a project saved with compression.

Screen display

[Project] ⇨ [Compress/Unpack] ⇨ [Unpack]



Operating procedure

1. **Set the items on the screen.**

Item		Description
Unpack Source Setting		
	Compressed File Name	Enter the folder (drive/path) in which the compressed file to be unpacked is saved, and the compressed file name. The compressed file name can be specified in the "Compressed File Name" screen by clicking the Browse... button.
Unpack Destination Project		
	Workspace Folder Path	Enter the folder (drive/path) to which the project to be unpacked is saved. The folder can be selected in the "Browse For Folder" screen by clicking the Browse... button.
	Workspace/Project List	Select a workspace and a project.
	Workspace Name	Enter the name of the workspace to which the unpacked project is saved.
	Project Name	Enter the name of the project to which the unpacked project is saved.

2. **Click the Unpack button.**

The compressed project file is unpacked and saved in the specified folder.

Screen button

- Unpack and Open button

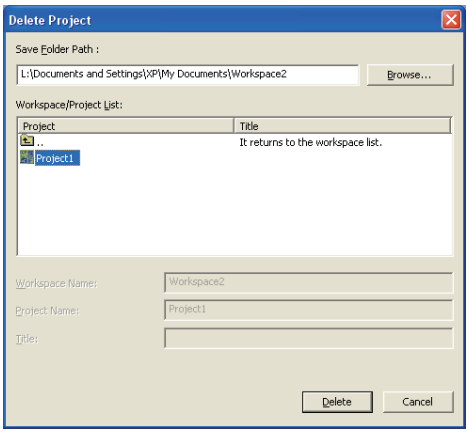
  Unpacks the compressed project file and opens the project.

9.5 Deleting Projects

This section explains a method for deleting a project saved in a hard disk or other memory media of a personal computer.

Operating procedure

1. **[Project] ⇨ [Delete]**
   The "Delete Project" screen is displayed.
2. **Select the project to be deleted.**
3. **Click the** Delete **button.**
   The selected project is deleted.



9.6 Closing Projects

This section explains a method for closing an open project.

Operating procedure

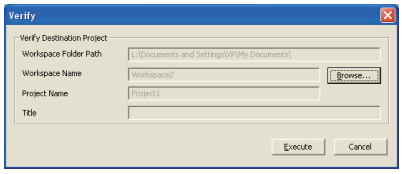
1. **[Project] ⇨ [Close]**

9.7 Verifying Project Data

This section explains a method for verifying data of an open project and data of another project.
Use this function to check if the data of the projects are the same, or to check the changed parameter locations.
To verify data in the board, perform the board verification. (☞ Page 126, Section 11.3)

Screen display

[Project] ⇨ [Verify]



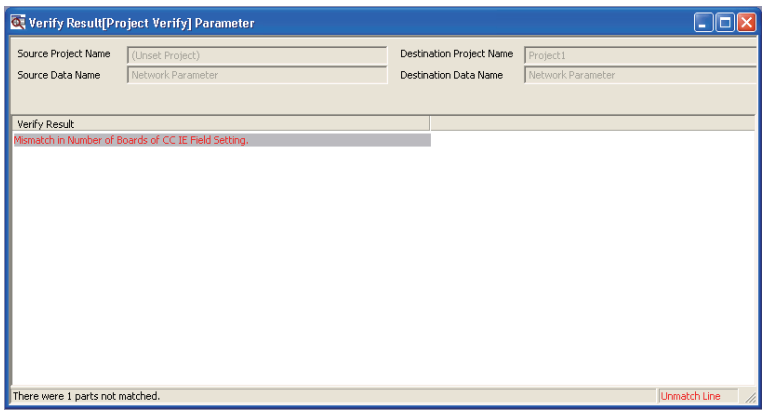
Operating procedure

1. **Click the Browse... button to set the verify destination project.**

Item		Description
Verify Destination Project		-
	Workspace Folder Path	Display the path to the workspace of the verify destination.
	Workspace Name	Display the workspace name of the verify destination.
	Project Name	Display the project name of the verify destination.
	Title	Display the project title of the verify destination.

2. **Click the Execute button.**

The verify result is displayed on the "Verify Result" screen.



CHAPTER 10 SETTING PARAMETERS

This chapter explains the parameter setting items and operations on the setting screens in CC IE Field Utility.

For writing set parameters to a board, refer to ☞ Page 125, Section 11.2.

10.1 Parameter List

The following table shows the list of CC-Link IE Field Network parameters.

○: Required, △: Set as required, —: No setting

Item		Necessity of setting		Reference
		Master station	Local stations	
Network setting	Network Type	○		Page 110, Section 10.2
	Channel No.	○		
	Network No.	○		
	Total Stations	○	-	
	Station No.	-	○	
	Mode	○		
Network Configuration Setting	Station No.	○	-	Page 112, Section 10.2.2
	Station Type	○		
	RX/RY Setting	○		
	RWw/RWr Setting	○		
	Reserved/Error Invalid Station	△		
	Alias	△		
	Comment	△		
	Supplementary Setting	△		
Network Operation Setting		△		Page 116, Section 10.2.3
Event Setting		△		Page 117, Section 10.2.4
Driver Setting		○		Page 119, Section 10.2.5
Target Setting		△		Page 120, Section 10.2.6
Routing Parameters		△		Page 121, Section 10.2.7

Point

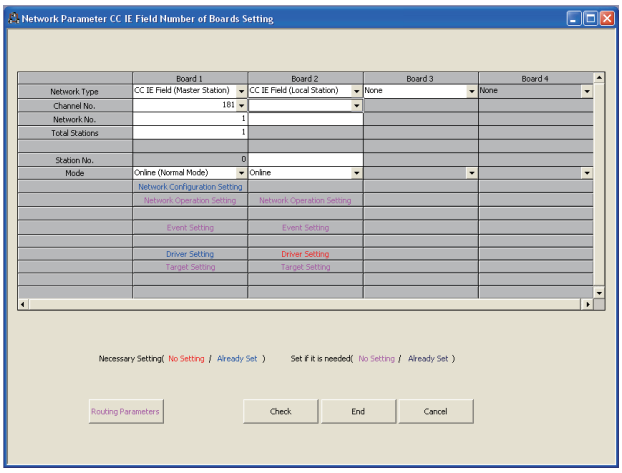
- When parameters are not set
  CC-Link IE Field Network board operates as a local station (station number 1) of network number 1 in the offline mode. In this case, only transient transmission is performed. (Cyclic transmission is not performed).

10.2 Setting Network Parameter

Set the network number, station number, and other parameters for the CC-Link IE Field Network board.

Display contents

[View] ⇨ [Network Parameter]



Operating procedure

1. **Set the items on the screen.**

Item		Description
Network setting		-
	Network Type	Select the network type. (☞ Page 111, Section 10.2.1)
	Channel No.	Select the channel number.
	Network No.	Set the network number. Setting range: 1 to 239
	Total Stations	Set the total number of stations. Setting range: 1 to 120
	Station No.	Set the station number of the board. Setting range: Fixed to 0 for a master station, 1 to 120 for a local station
	Mode	Select the mode. (☞ Page 111, Section 10.2.1)
Network Configuration Setting		Display the "Network Configuration Setting" screen. (☞ Page 112, Section 10.2.2)
Network Operation Setting		Display the "Network Operation Setting" screen. (☞ Page 116, Section 10.2.3)
Event Setting		Display the "Event Setting" screen. (☞ Page 117, Section 10.2.4)
Driver Setting		Display the "Driver Setting" screen. (☞ Page 119, Section 10.2.5)
Target Setting		Display the "Target Setting" screen. (☞ Page 120, Section 10.2.6)

2. **Click the** End **button.**

Screen button

- Routing Parameters **button**

  Displays the "CC IE Field Routing Information Setting" screen. (☞ Page 121, Section 10.2.7)

- Check **button**

  Checks whether the settings are correct.

10.2.1 Network type and mode

The following explains network types and modes of parameter.

(1) Network type

The following types can be selected.

Item	Description
CC IE Field (Master Station)	Use as a master station in the CC-Link IE Field Network.
CC IE Field (Local Station)	Use as a local station in the CC-Link IE Field Network.

(2) Mode

Selectable items for the mode are different depending on the network type.

(a) Master station

The following modes can be selected.

Item	Description
Online (Normal Mode)	This mode performs cyclic transmission and transient transmission without losing their inherent speed performance. This mode is suitable for a system that performs I/O control and analog control, and transmits large amount of data for management, monitoring, and diagnostics by transient transmission. Use this mode for general applications.
Online (High Speed Mode)	This mode preferentially performs cyclic transmission for high-speed communications. This mode is suitable for a system to achieve I/O control, analog control, and digital I/O at high speed. Note that the maximum points assigned to RWw/RWr is 256 points per local station. In this mode, the processing speed of transient transmission is slower than that in "Online (Normal Mode)"
Offline	Select this mode to disconnect the station from the network for stopping data link with other stations.

For the differences in cyclic transmission between "Online (Normal Mode)"and "Online (High Speed Mode)", refer to the following section.

☞Page 256, Appendix 6

(b) Local stations

The following modes can be selected.

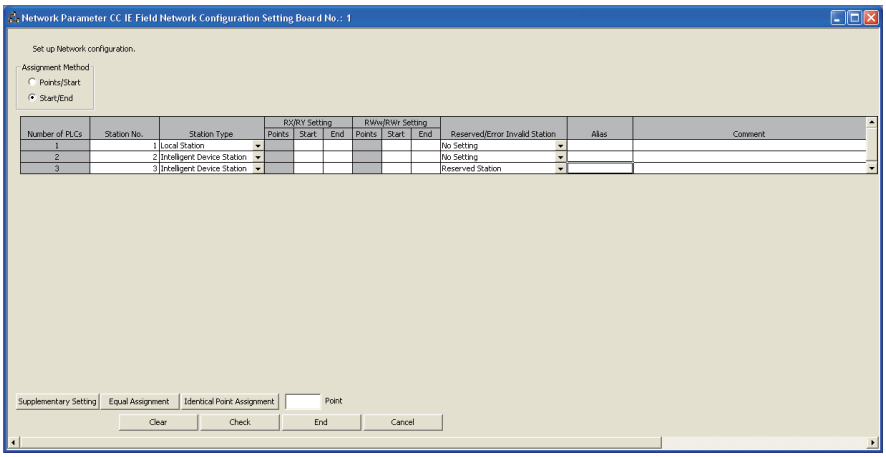
Item	Description
Online	Select this mode to connect the station to the network for performing data link with other stations.
Offline	Select this mode to disconnect the station from the network for stopping data link with other stations.

10.2.2 Network configuration setting

Set parameters of slave stations (slave station points, link device assignment) to the master station, and set link scan mode and block data assurance per station.
This setting is available when "CC IE Field (Master Station)" is selected in the network setting.

Display contents

[View] ⇨ [Network Parameter] ⇨ "CC IE Field Number of Boards Setting" screen ⇨ "Network Configuration Setting"



Operating procedure

1. **Set the items on the screen.**

Item		Description
Assignment Method		Select an assignment method for send range of each station.
Number of PLCs		Display the number of stations from 1 to total stations.
Station No.		Set the station number. Setting range: 1 to 120
Station Type		Select the station type.
RX/RY Setting	Points	Specify the number of relay points on the link side. Setting range: 16 to 2048 points for "Local Station" and "Intelligent Device Station" 16 to 128 points for "Remote Device Station" 16 to 64 points for "Remote I/O Station"
	Start	Specify the start point of relay on the link side. Setting range: 0 to 3FF0
	End	Specify the end point of relay on the link side. Setting range: F to 3FFF
RWw/RWr Setting	Points	Specify the number of registers on the link side. Setting range: 4 to 1024 points for "Local Station" and "Intelligent Device Station" 4 to 64 points for "Remote Device Station"
	Start	Specify the start point of register on the link side. Setting range: 0 to 1FFC
	End	Specify the end point of register on the link side. Setting range: 3 to 1FFF
Reserved / Error Invalid Station		Set reserved stations and error invalid stations.

Item	Description
Alias	Set the alias. Setting range: Up to 8 characters
Comment	Set the comment. Setting range: Up to 32 characters

2. **Click the** End **button.**

Screen button

- Supplementary Setting **button**

  Displays the "Supplementary Setting" screen. (☞ Page 114, Section 10.2.2 (1))

- Equal Assignment **button**

  Displays the "Equal Assignment" screen. (☞ Page 115, Section 10.2.2 (2))

- Identical Point Assignment **button**

  Assigns the same link device points to all local stations. Enter the points in the field next to the Identical Point Assignment button.

- Clear **button**

  Clears all settings.

- Check **button**

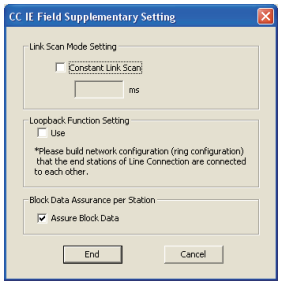
  Checks whether the settings are correct.

(1) Supplementary setting

Set the link scan mode, loopback function, and block data assurance per station.

Display contents

[View] ⇨ [Network Parameter] ⇨ "CC IE Field Number of Boards Setting" screen ⇨ "Network Configuration Setting" ⇨ "Network Configuration Setting" screen ⇨ Supplementary Setting button


CC IE Field Supplementary Setting
Link Scan Mode Setting
Constant Link Scan
ms
Loopback Function Setting
Use
*Please build network configuration (ring configuration) that the end stations of Line Connection are connected to each other.
Block Data Assurance per Station
Assure Block Data
End
Cancel

Operating procedure

1. Set the items on the screen.

Item	Description
Link Scan Mode Setting	Link scan is executed 'asynchronously' with the link refresh which is executed by the CC-Link IE Field Network board driver.
Constant Link Scan	Check the check box and set the constant link scan time. Setting range: 1 to 200
Loopback Function Setting	-
Use	Select whether to use the loopback function. (☞ Page 85, Section 5.8) To configure a network in ring topology, select this check box.
Block Data Assurance per Station	Select whether to assure data integrity on a station basis in link refresh between the driver and the board.

2. Click the End button.

(a) Link scan mode setting

The constant link scan can be set by checking the check box.

Set this item to perform cyclic transmission at constant intervals. Link scan will be performed by the interval set in this item.

However, when the actual link scan time is longer than constant link scan time, cyclic transmission is performed by link scan time. While constant link scan is used to keep link scan time constant, the transmission delay time is not kept constant by this function.

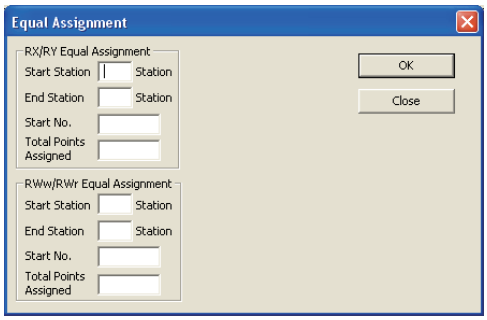
Set constant link scan in increments of 1ms.

(2) Equal assignment

Equally assign link devices to local stations with preset conditions.

Display contents

[View] ⇨ [Network Parameter] ⇨ "CC IE Field Number of Boards Setting" screen ⇨ "Network Configuration Setting" ⇨ "Network Configuration Setting" screen ⇨ Equal Assignment button



Operating procedure

1. **Set the items on the screen.**

Item		Description
RX/RY Equal Assignment		-
	Start Station	Set the start station number of local stations for which link devices are equally assigned. Setting range: 1 to the end slave station number
	End Station	Set the end station number of local stations for which link devices are equally assigned. Setting range: Start station number to the end slave station number
	Start No.	Set the start number of link devices to be equally assigned. Setting range: 0 to 3FF0
	Total Points Assigned	Set the total points of link devices to be equally assigned. Setting range: 16 to (16384 - start number)
RWw/RWr Equal Assignment		-
	Start Station	Set the start station number of local stations for which link devices are equally assigned. Setting range: 1 to the end slave station number
	End Station	Set the end station number of local stations for which link devices are equally assigned. Setting range: Start station number to the end slave station number
	Start No.	Set the start number of link devices to be equally assigned. Setting range: 0 to 1FFC
	Total Points Assigned	Set the total points of link devices to be equally assigned. Setting range: 4 to (8192 - start number)

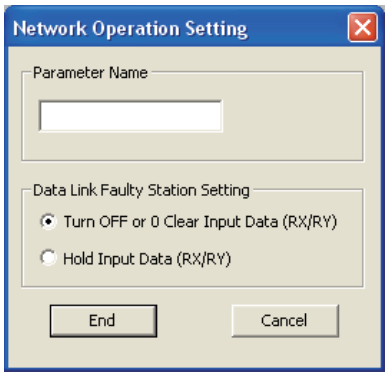
2. **Click the OK button.**

10.2.3 Network operation setting

Set the parameter name and network operation at data link error.

Display contents

[View] ⇨ [Network Parameter] ⇨ "CC IE Field Number of Boards Setting" screen ⇨ "Network Operation Setting"



Operating procedure

1. **Set the items on the screen.**

Item	Description
Parameter Name	Set the parameter name of the "Network Operation Setting". Setting range: Up to 8 characters
Data Link Faulty Station Setting	Select whether to hold or clear data input from the slave station where a data link error has occurred.

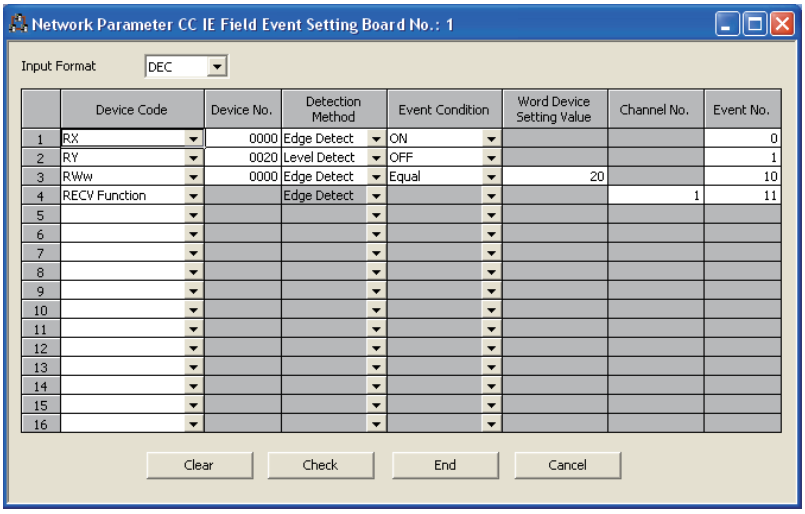
2. **Click the** End **button.**

10.2.4 Event setting

Set conditions to notify events to a user program.

Display contents

[View] ⇨ [Network Parameter] ⇨ "CC IE Field Number of Boards Setting" screen ⇨ "Event Setting"



Operating procedure

1. **Set the items on the screen.**

Item	Description
Input Format	Set the format of the setting value.
Device Code*1	Set the link device name for the event condition.
Device No.	Set the link device number for the event condition. Setting range: For link devices RX and RY: 0 to 3FFF For link devices SB and SW: 0 to 01FF For link devices RWw and RWr: 0 to 1FFF
Detection Method	Set the detection method. (☞ Page 118, (1) in this section)
Event Condition	Set the event condition. (☞ Page 118, (1) in this section)
Word Device Setting Value	Set the word device setting value. Setting range: For DEC: 0 to 65535 For HEX: 0000 to FFFF
Channel No.	Set the channel number (use for dedicated instructions) . Setting range: 1 to 2
Event No.	Set the event number. Setting range: 0 to 15

*1 : When selecting "RECV Function", set "No Setting" for "RECV Function Reception Buffer" in the driver setting.

2. **Click the** End **button.**

Screen button

- Clear **button**
  Clears all settings.
- Check **button**
  Checks whether the settings are correct.

(1) Combination of detection method and event condition

The following table shows results and events of the combination of detection method and event condition.

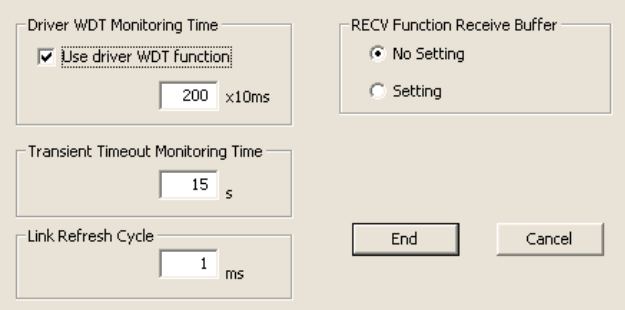
Device	Detection Method	Event Condition	Description
RX RY SB	Edge Detect	ON	An event occurs at the rising edge of the device.
		OFF	An event occurs at the falling edge of the device.
	Level Detect	ON	An event occurs by turning ON the device.
		OFF	An event occurs by turning OFF the device.
RWw RWr SW	Edge Detect	Equal	An event occurs when values match. (First time only)
		Unequal	An event occurs when values do not match. (First time only)
		Change	An event occurs when values change. (First time only)
	Level Detect	Equal	An event occurs when values match.
		Unequal	An event occurs when values do not match.
RECV Function	Edge Detect	-	An event occurs when a specified channel receives data.

10.2.5 Driver setting

Set the driver WDT monitoring time, transient timeout monitoring time, link refresh cycle, and RECV function reception buffer.

Display contents

[View] ⇨ [Network Parameter] ⇨ "CC IE Field Number of Boards Setting" screen ⇨ "Driver Setting"



Operating procedure

1. **Set the items on the screen.**

Item	Description
Driver WDT Monitoring Time	Select "Use driver WDT function" to enable the function. Set the driver WDT monitoring time. Setting range: 1 to 32767
Transient Timeout MonitoringTime	Set the transient timeout monitoring time. Setting range: 1 to 360
Link Refresh Cycle	Set the link refresh cycle. Setting range: 1 to 1000
RECV Function Reception Buffer*1	Set the RECV function reception buffer.

*1 : Set "No Setting" when "RECV Function" is selected for the device code in the event setting.

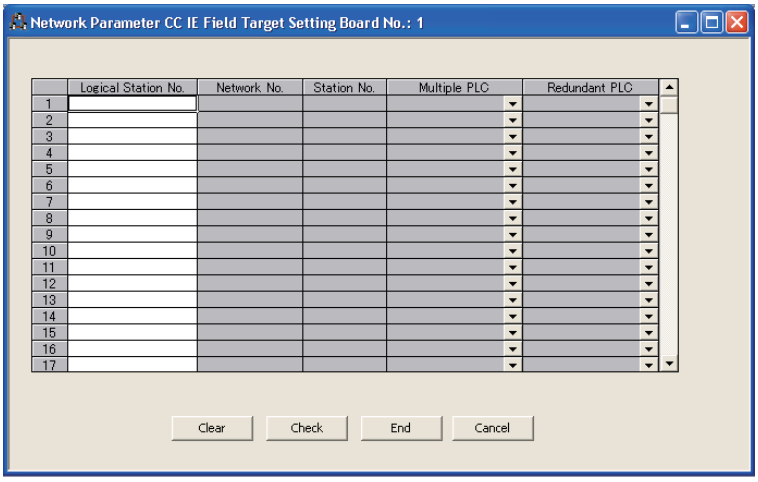
2. **Click the** End **button.**

10.2.6 Target setting

Set logical station numbers to access to multiple CPU system or redundant CPU system using the MELSEC data link library function.

Display contents

[View] ⇨ [Network Parameter] ⇨ "CC IE Field Number of Boards Setting" screen ⇨ "Target Setting"



Operating procedure

1. **Set the items on the screen.**

Item	Description
Logical Station No.	Set the logical station number. Setting range: 0 to 239
Network No.	Set the network number of the access target. Setting range: 1 to 239
Station No.	Set the station number of the access target. Setting range: 0 to 120
Multiple PLC	Set the access target CPU (CPU number in the multiple CPU system).
Redundant PLC	Set the access target CPU (system specification for the redundant system).

2. **Click the** End **button.**

Screen button

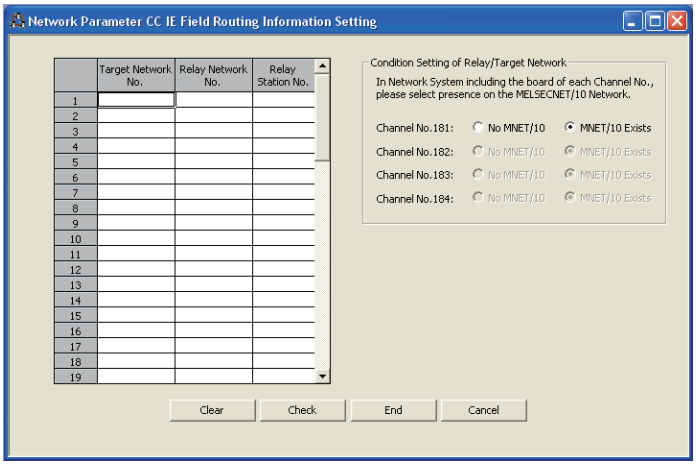
- Clear **button**
  Clears all settings.
- Check **button**
  Checks whether the settings are correct.

10.2.7 Routing parameters

Set communication paths for transient transmission between a station in the own network and stations in other networks.

Display contents

[View] ⇨ [Network Parameter] ⇨ "CC IE Field Number of Boards Setting" screen ⇨ Routing Parameters button


Network Parameter CC IE Field Routing Information Setting
Target Network No.
Relay Network No.
Relay Station No.
Condition Setting of Relay/Target Network
In Network System including the board of each Channel No., please select presence on the MELSECNET/10 Network.
Channel No.181: No MNET/10 MNET/10 Exists
Channel No.182: No MNET/10 MNET/10 Exists
Channel No.183: No MNET/10 MNET/10 Exists
Channel No.184: No MNET/10 MNET/10 Exists
Clear
Check
End
Cancel

Operating procedure

1. Set the items on the screen.

Item	Description
Target Network No.	Set the target network number. Numbers cannot be overlapped. Setting range: 1 to 239
Relay Network No.	Set the first relay network number in the path to the target network. Setting range: 1 to 239
Relay Station No.	Set the first relay station number in the path to the target network. Setting range: 0 to 120
Condition Setting of Relay/ Target Network	Set whether MELSECNET/10 network is used for routing the network.

2. Click the End button.

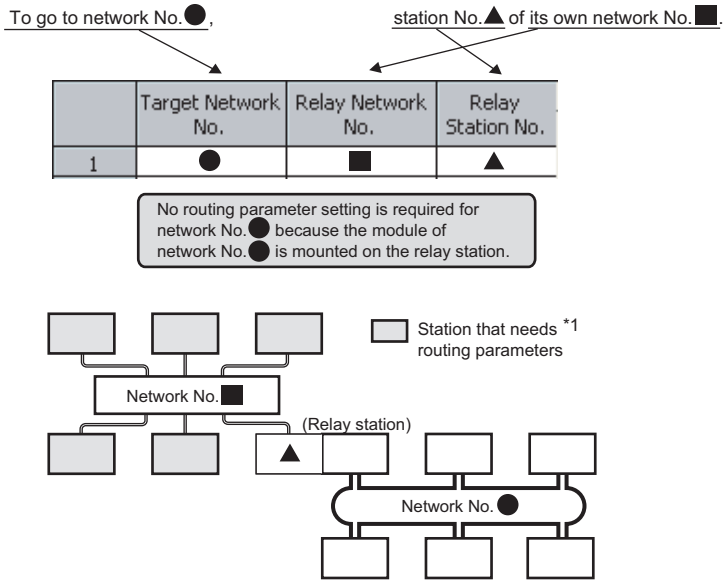
Screen button

- Clear **button**
  Clears all settings.
- Check **button**
  Checks whether the settings are correct.

(1) Target relay network

For a relay station set in the routing parameter, set a relay station of the own network which is routed by the transient transmission.

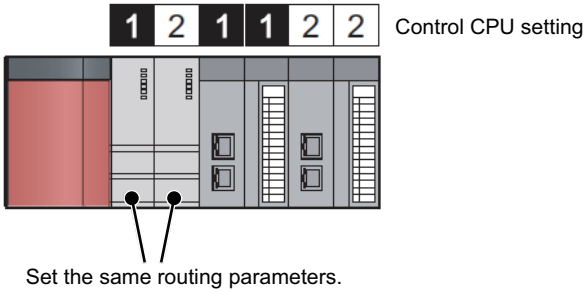
Ex. A setting to perform transient transmission to network number ●


To go to network No.●,
station No.▲ of its own network No.■.
Target Network No.
Relay Network No.
Relay Station No.
1
No routing parameter setting is required for network No.● because the module of network No.● is mounted on the relay station.
Station that needs *1 routing parameters
Network No.■
(Relay station)
Network No.●

*1 : The stations, which routing parameter settings are not supported such as head modules, do not need to be set. The communication with other networks is made depending on the routing parameters set to the master station.

Point

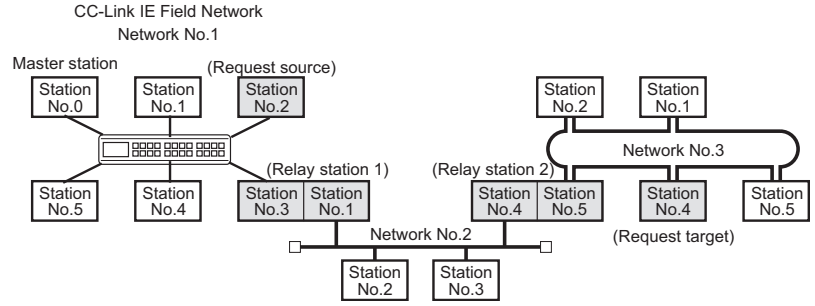
- Transient transmission range
  Communications can be made with stations on up to the eighth network (the number of relay stations: 7).
- To check whether routing parameters have been correctly set and transient transmission will be successfully performed, perform a communication test in CC-Link IE Field Network diagnostics. (☞ Page 61, Section 4.7.3)
- On a relay station in the multiple CPU system, when different control CPUs are set for the network modules
  Set the same routing parameters to all the control CPUs.



(2) Stations that need routing parameter settings

Routing parameter settings are required for relay stations and a request source which performs transient transmission to other networks.

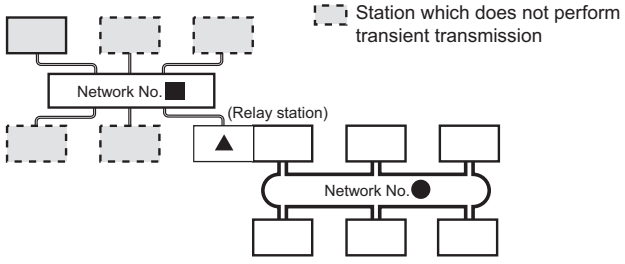
Ex. A setting to perform transient transmission from the station number 2 on the network number 1 to the station number 4 on the network number 3



Station	Transient transmission (request)		Transient transmission (response)	
Request source	Station No.2	Target Network No. 3 / Relay Network No. 1 / Relay Station No. 3 Transmit data through station No. 3 on network No. 1 to communicate with network No. 3.	Station No.2	
Relay station 1	Station No.3 Station No.1	Target Network No. 3 / Relay Network No. 2 / Relay Station No. 4 Transmit data through station No. 4 on network No. 2 to communicate with network No. 3.	Station No.3 Station No.1	Pass data to the request source on network No.1.
Relay station 2	Station No.4 Station No.5	Passes data to the request target on network No.3.	Station No.4 Station No.5	Target Network No. 1 / Relay Network No. 2 / Relay Station No. 1 Transmit data through station No.1 on network No.2 to communicate with network No.1.
Request target	Station No.4			Pass data to the relay station automatically.

Point

- Setting for stations that do not perform transient transmission to other networks
  Routing parameters are not required for stations that do not perform transient transmission to other networks; however, setting the same routing parameters to all stations is recommended.



It is recommended to set the same routing parameters as ▭ for ⬚.
⬚ and ▭ can communicate by the same routing parameters, since they pass through the same relay station.

Note that routing parameters need not to be set for stations for which routing parameters are not available (such as a station including a head module). The station communicates with other networks according to routing parameters set to the master station.

CHAPTER 11 OPERATING BOARD ONLINE

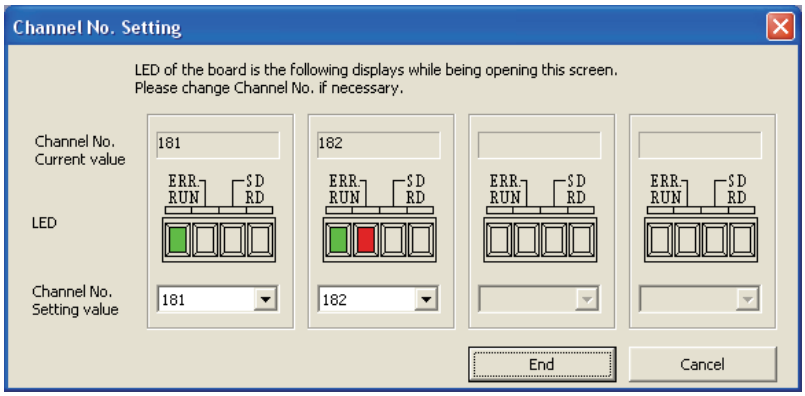
This chapter explains a method for operating a board online using CC IE Field Utility.

11.1 Setting Board Channel Numbers

This section explains a method for checking/setting board channel numbers.

Display contents

[Online] ⇨ [Channel No. Setting]



Operating procedure

1. Set the items on the screen.

Item	Description
Channel No. Current Value	Display current channel numbers of each board.
LED	Display LED status of each board. The status is displayed as shown below according to the current channel number while opening the "Channel No. Setting" screen. <181> <182> <183> <184>
Channel No. Setting Value	Set the channel number.

2. Click the End button.

"Channel No. Setting Value" is set to the board.

Point

181 is set for the board channel number as a factory default.
When using two or more boards in a single personal computer, set channel numbers not to overlap.

11.2 Writing/Reading Parameters to/from Board

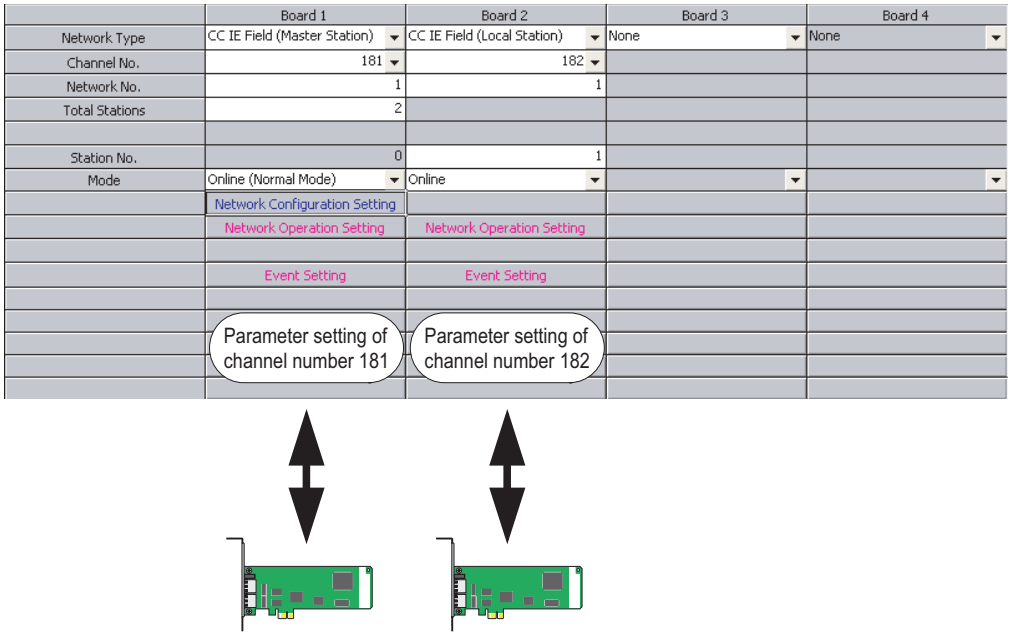
This section explains methods for writing project parameter settings to the board and reading current board parameter settings to the project.

Operating procedure

1. **[Online] ⇨ [Read from Board]/[Write to Board].**

Remark

- Channel numbers
  Parameter settings to be written to the board are reflected to the board of the corresponding channel number.
  Change board channel numbers on the "Channel No. Setting" screen. (Page 124, Section 11.1)



- Creating a new project with data read from the board
  A new project is created with the data read from the board when data are read from the board before creating a new project. (For reading data from board Page 101, Section 9.1)

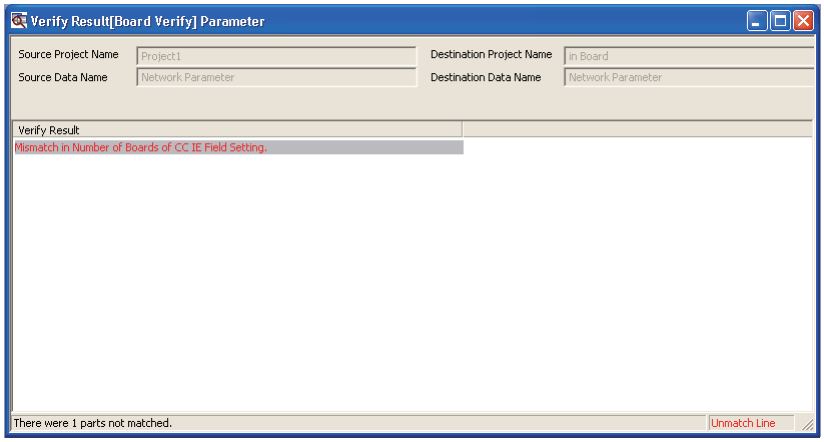
11.3 Verifying Parameters of Board and Project

This section explains a method for verifying parameters set to the board and parameters of open project.
Use this function to check if the parameters of the projects are the same, or to check the changed parameter locations.
To verify two projects, perform the project verification. (☞ Page 108, Section 9.7)

Display contents

[Online] ⇨ [Board Verify]

The verify result is displayed on the "Verify Result" screen.

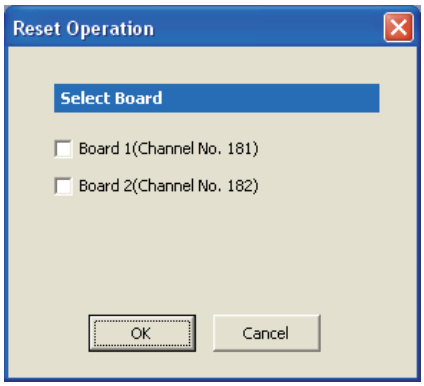


11.4 Resetting Board

This section explains a method for resetting the board from CC IE Field Utility.

Display contents

[Online] ⇨ [Reset Operation]



Operating procedure

1. **Check the check box of the board to be reset.**
2. **Click the** OK **button.**
   The selected board is reset.

CHAPTER 12 MONITORING

This chapter explains the operation and setting methods of the monitoring function.
This function is performed using Device Monitor Utility.

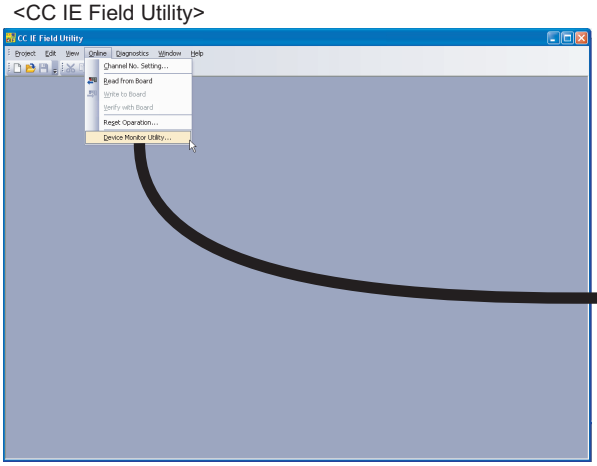
12.1 Overview of Device Monitor Utility

(1) Overview

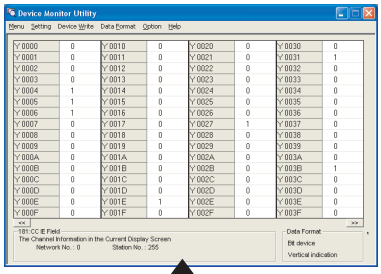
Device Monitor Utility is a utility to monitor devices and change current values.

The utility is started from the menu of CC IE Field Utility, or from Windows® start

<CC IE Field Utility>



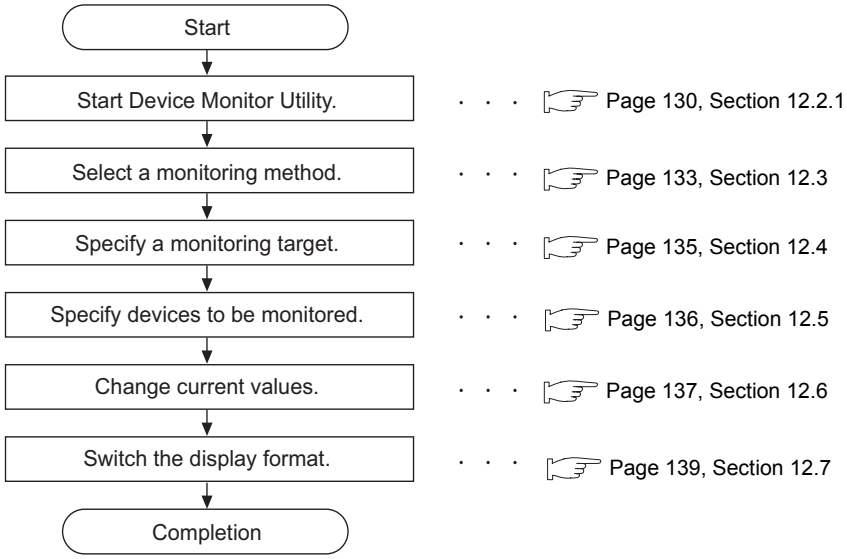
<Device Monitor Utility>



<Windows® start menu>

(2) Operation flow

The following flowchart shows a basic monitoring operation flow.



· · · Page 130, Section 12.2.1
· · · Page 133, Section 12.3
· · · Page 135, Section 12.4
· · · Page 136, Section 12.5
· · · Page 137, Section 12.6
· · · Page 139, Section 12.7

(3) Menu list

The following explains the functions of Device Monitor Utility.

Menu		Reference
Batch monitor	Batch monitor one type of devices.	Page 133, Section 12.3.1
16-point register monitor	Monitor multiple devices simultaneously in units of 16 points.	Page 134, Section 12.3.2
Exit	Exit Device Monitor Utility.	Page 130, Section 12.2.1

Setting		Reference
Network setting	Set a programmable controller CPU or board to be monitored.	Page 135, Section 12.4
Device setting	Set devices to be monitored.	Page 136, Section 12.5

Device Write		Reference
Data Changing	Change the word device value.	Page 137, Section 12.6.1
Continuous Change in Data	Change the sequenced word devices to the same value.	
Bit Device Set	Turn ON the specified bit devices.	Page 138, Section 12.6.2
Bit Device Reset	Turn OFF the specified bit devices.	

Data Format		Reference
Word device		Page 139, Section 12.7
(Display format)	Change the display format of word devices.	
Bit device		
(Display format)	Change the display format of bit devices.	

Options		Reference
Numerical Pad	Enable/disable the setting to use the numerical pad.	Page 141, Section 12.8

Help		Reference
Help	Display Help.	Page 132, Section 12.2.3
Version	Display product information such as a product version.	

12.2 Screen Configuration and Basic Operations of Device Monitor Utility

This section explains the screen configuration and basic operations of Device Monitor Utility.

12.2.1 Start and completion

The following explains the operating method to start/end the utility.

(1) Start

Start Device Monitor Utility.

(a) Start from CC IE Field Utility

Operating procedure

1. **[Online] ⇨ [Device Monitor Utility]**

(b) Start from the Windows® start

Operating procedure

1. **"Start" of Windows®*1 ⇨ [MELSEC] ⇨ [Device Monitor Utility]**

*1 : [Start screen] - [All apps] or [Start] - [All Programs]

(2) Completion

End Device Monitor Utility.

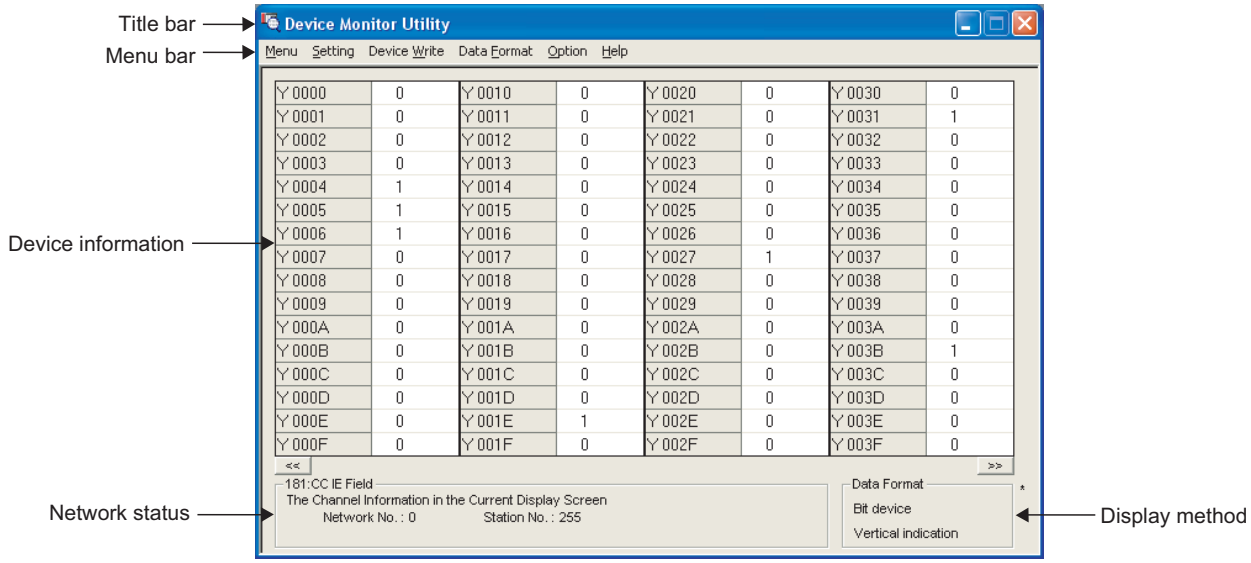
Operating procedure

1. **[Menu] ⇨ [Exit]**

12.2.2 Screen configuration and basic operations

The following explains the screen configuration of Device Monitor Utility.

Screen display



Display contents

Item	Description
Title bar	Display a project name.
Menu bar	Display menu options for executing each function.
Device information	Display the current device status. For changing the monitoring method, refer to the following section. ☞ Page 133, Section 12.3 For changing the current values, refer to the following section. ☞ Page 137, Section 12.6
Network status	Display the currently set network status. For setting the network, refer to the following section. ☞ Page 135, Section 12.4
Display method	Display the type and display format of devices being displayed. For changing a device type, refer to the following section. ☞ Page 136, Section 12.5 For changing a display format, refer to the following section. ☞ Page 139, Section 12.7

Point

- When own station is set as a monitoring target
  "0" is displayed for the network number and "255" is displayed for the station number as a network status.

12.2.3 Help function

(1) Displaying Help screen

Display the Help screen of Device Monitor Utility.

Operating procedure

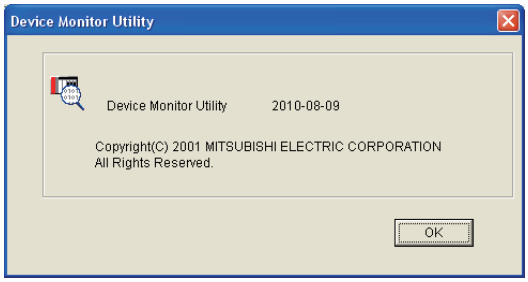
1. **[Help] ⇨ [Manual]**

(2) Checking product version

Display information such as a software version of Device Monitor Utility.

Operating procedure

1. **[Help] ⇨ [Version]**



12.3 Selecting Monitoring Method

This section explains a method for selecting a monitoring method in Device Monitor Utility.

12.3.1 Batch-monitoring devices

Batch-monitor devices whose type is specified on the "Device Setting" screen.

Screen display

[Menu] ⇨ [Batch monitor]

< Bit devices >

Y 0000	0	Y 0010	0	Y 0020	0	Y 0030	0
Y 0001	0	Y 0011	0	Y 0021	0	Y 0031	1
Y 0002	0	Y 0012	0	Y 0022	0	Y 0032	0
Y 0003	0	Y 0013	0	Y 0023	0	Y 0033	0
Y 0004	1	Y 0014	0	Y 0024	0	Y 0034	0
Y 0005	1	Y 0015	0	Y 0025	0	Y 0035	0
Y 0006	1	Y 0016	0	Y 0026	0	Y 0036	0
Y 0007	0	Y 0017	0	Y 0027	1	Y 0037	0
Y 0008	0	Y 0018	0	Y 0028	0	Y 0038	0
Y 0009	0	Y 0019	0	Y 0029	0	Y 0039	0
Y 000A	0	Y 001A	0	Y 002A	0	Y 003A	0
Y 000B	0	Y 001B	0	Y 002B	0	Y 003B	1
Y 000C	0	Y 001C	0	Y 002C	0	Y 003C	0
Y 000D	0	Y 001D	0	Y 002D	0	Y 003D	0
Y 000E	0	Y 001E	1	Y 002E	0	Y 003E	0
Y 000F	0	Y 001F	0	Y 002F	0	Y 003F	0
<<							>>

< Word devices >

Ww 0000	0	Ww 0010	0	Ww 0020	0	Ww 0030	0
Ww 0001	0	Ww 0011	0	Ww 0021	0	Ww 0031	0
Ww 0002	0	Ww 0012	0	Ww 0022	0	Ww 0032	0
Ww 0003	0	Ww 0013	0	Ww 0023	0	Ww 0033	0
Ww 0004	0	Ww 0014	0	Ww 0024	0	Ww 0034	0
Ww 0005	10	Ww 0015	0	Ww 0025	0	Ww 0035	0
Ww 0006	0	Ww 0016	0	Ww 0026	0	Ww 0036	0
Ww 0007	0	Ww 0017	0	Ww 0027	0	Ww 0037	0
Ww 0008	0	Ww 0018	0	Ww 0028	0	Ww 0038	0
Ww 0009	0	Ww 0019	255	Ww 0029	0	Ww 0039	0
Ww 000A	0	Ww 001A	0	Ww 002A	0	Ww 003A	0
Ww 000B	0	Ww 001B	0	Ww 002B	0	Ww 003B	0
Ww 000C	0	Ww 001C	0	Ww 002C	0	Ww 003C	0
Ww 000D	0	Ww 001D	0	Ww 002D	0	Ww 003D	0
Ww 000E	0	Ww 001E	0	Ww 002E	0	Ww 003E	0
Ww 000F	0	Ww 001F	0	Ww 002F	0	Ww 003F	0
<<							>>

Display contents

Item		Description
Device information		Display the current device status.
	Device name	Display the monitoring target device names.
	Monitoring result	Display the monitoring result of each device. • For bit device 0: OFF, 1: ON • For word devices Values in set display format (Page 139, Section 12.7)

Screen button

- << >> button

  Scrolls the display area.

12.3.2 Monitoring registered 16-point devices

Monitor devices by specifying different types of devices in units of 16 points.
This function can monitor a maximum of five different types of bit devices and one type of word devices simultaneously.
The displayed information of devices is the same as that of the batch monitor function.

Screen display

[Menu] ⇨ [16 point register monitor]

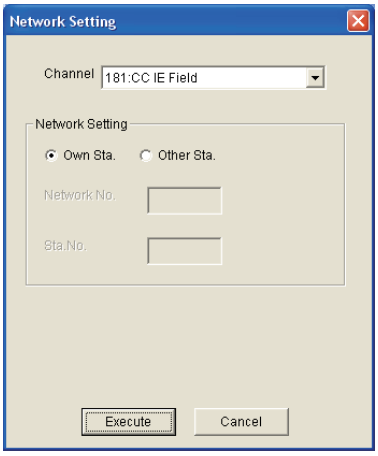
X 0000	0	X 0010	0	Y 0000	0	Y 0010	0	Ww 0000	0
X 0001	0	X 0011	0	Y 0001	0	Y 0011	0	Ww 0001	0
X 0002	0	X 0012	0	Y 0002	0	Y 0012	0	Ww 0002	0
X 0003	0	X 0013	0	Y 0003	0	Y 0013	0	Ww 0003	0
X 0004	0	X 0014	0	Y 0004	1	Y 0014	0	Ww 0004	0
X 0005	0	X 0015	0	Y 0005	1	Y 0015	0	Ww 0005	10
X 0006	0	X 0016	0	Y 0006	1	Y 0016	0	Ww 0006	0
X 0007	0	X 0017	0	Y 0007	0	Y 0017	0	Ww 0007	0
X 0008	0	X 0018	0	Y 0008	0	Y 0018	0	Ww 0008	0
X 0009	0	X 0019	0	Y 0009	0	Y 0019	0	Ww 0009	0
X 000A	0	X 001A	0	Y 000A	0	Y 001A	0	Ww 000A	0
X 000B	0	X 001B	0	Y 000B	0	Y 001B	0	Ww 000B	0
X 000C	0	X 001C	0	Y 000C	0	Y 001C	0	Ww 000C	0
X 000D	0	X 001D	0	Y 000D	0	Y 001D	0	Ww 000D	0
X 000E	0	X 001E	0	Y 000E	0	Y 001E	1	Ww 000E	0
X 000F	0	X 001F	0	Y 000F	0	Y 001F	0	Ww 000F	0

12.4 Setting Monitoring Target

This section explains the method for setting a programmable controller CPU or CC-Link IE Field Network board to be monitored.
Set a target when starting Device Monitor Utility.

Screen display

[Setting]⇨[Network Setting]



Operating procedure

1. Set the items on the screen.

Item	Description
Channel	Set the access source channel number to be used.
Network Setting	Set the monitoring target. Set the network number and the station number when the access target is at another station.

2. Click the Execute button.

Point

- Accessing multiple CPU system
  Enter "0" for the network number and a value of "logical station number" which was set in the each utility for the station number.

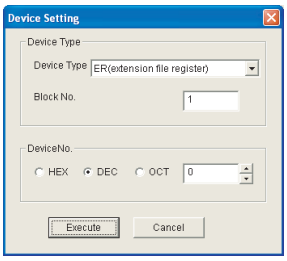
12.5 Setting Devices to be Monitored

This section explains a method for setting devices to be monitored.

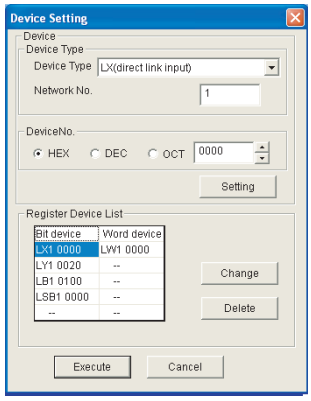
Screen display

[Setting]⇨[Device Setting]

< For batch monitor >



< For 16-point register monitor >



Operating procedure

1. Set the items on the screen.

Item	Description
Device Type	Set a type of device to be monitored. • Enter a block number for ER. • Enter a network number for LX, LY, LB, LW, LSB, and LSW. • Enter a value of start I/O number divided by 16 in decimal for SPG.
Device No.	Set a start number of the device to be monitored. (HEX: Hexadecimal, DEC: Decimal, OCT: Octal)
Register Device List	Display a list of registered devices.

2. Click the Execute button.

Screen button

- Setting **button**
  Adds the items set for "Device Type" and "Device No." to "Register Device List".
- Change **button**
  Sets the setting of the device selected in "Register Device List" to the settings set for "Device Type" and "Device No.".
- Delete **button**
  Deletes the setting of the device selected in "Register Device List".

Point

- Devices that can be monitored with 16-point register monitor
  The only devices that can be monitored using the 16-point register monitor are ones that have random access capability.
  If a device that is not capable of random access is specified, a device type error will occur.
  For details of the random access capability of each device, refer to the following manual.
  MELSEC Data Link Library Reference Manual

12.6 Changing Current Values

This section explains a method for changing current device values.

Point

- Precaution
  When changing data during an operation, configure interlock circuits in a program to ensure the safe system operation. Countermeasures against data communication errors should be arranged between a personal computer and a CPU module as a system.

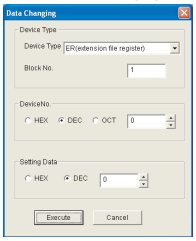
12.6.1 Changing word device values

Change word device values. The "Continuous Change in Data" function changes the values of continuous word devices to the same value.

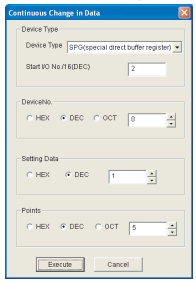
Screen display

[Device Write]⇨ [Data Changing]/[Continuous Change in Data]

< For Data Changing >



< For Continuous Change in Data >



Operating procedure

1. Set the type and number of devices whose current values are to be changed.

Item	Description
Device Type	Set a type of devices whose values are to be changed. • Enter a block number for ER. • Enter a network number for LW and LSW. • Enter a value of start I/O number divided by 16 in decimal for SPG.
Device No.	Set a start number of devices whose values are to be changed. (HEX: Hexadecimal, DEC: Decimal, OCT: Octal)

2. Set a value and points to be changed.

Item	Description
Setting Data	Set a value to be changed. (HEX: Hexadecimal, DEC: Decimal)

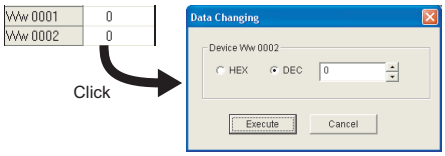
3. For the "Continuous Changing in Data" function, set device points to be changed.

Item	Description
Points	Set a number of devices whose values are to be changed. (HEX: Hexadecimal, DEC: Decimal, OCT: Octal) Setting range: 1 to 64 points

4. Click the Execute button.

Remark

A data of a word device can also be changed by double-clicking the device column of the device information on the monitoring screen.

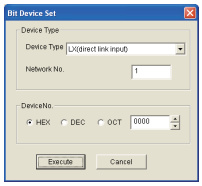


12.6.2 Turning bit devices ON and OFF

Change ONs and OFFs of bit devices.

Screen display

[Device Write]⇨[Bit Device Set]/[Bit Device Reset]



Operating procedure

1. Set the type and number of devices whose current status are to be changed.

Item	Description
Device Type	Set a type of devices whose status are to be changed. • Enter a network number for LX, LY, LB, and LSB.
Device No.	Set a start number of devices whose status are to be changed. (HEX: Hexadecimal, DEC: Decimal, OCT: Octal)

2. Click the Execute button.

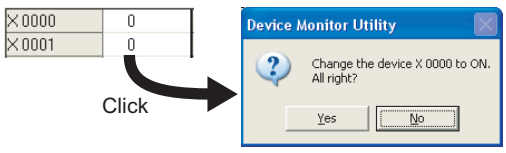
Point

● Devices that can be changed
The only devices that can be changed in this function are ones that have random access capability.
If a device that is not capable of random access is specified, a device type error will occur.
For details of the random access capability of each device, refer to the following manual.

MELSEC Data Link Library Reference Manual

Remark

A bit device can also be turned ON and OFF by double-clicking the device column of the device information on the monitoring screen.



12.7 Switching Display Format

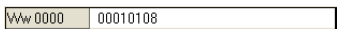
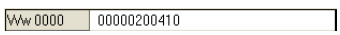
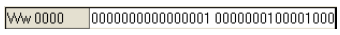
This section explains a method for switching a display format (such as in hexadecimal or in decimal) of device information for monitoring.

Operating procedure

1. **[Data Format] ⇨ [Word device]/[Bit device] ⇨ [(display format)]**

(1) Display format of word device

The following are display formats that can be selected for word devices.

Display format	Example
DEC (decimal) (16 bits)	
HEX (hexadecimal) (16 bits)	
OCT (octal) (16 bits)	
BIN (binary) (16 bits)	
DEC (decimal) (32 bits)	
HEX (hexadecimal) (32 bits)	
OCT (octal) (32 bits)	
BIN (binary) (32 bits)	

(a) Numeral system

Select from decimal, hexadecimal, octal, or binary.

Monitored current values are displayed in a selected numeral system.

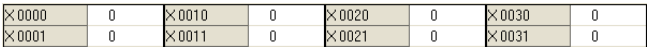
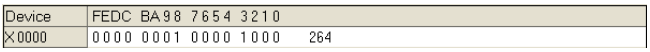
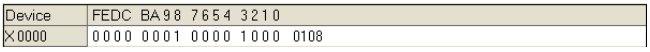
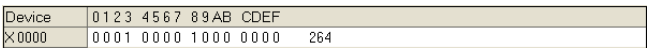
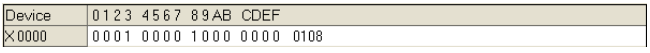
(b) Bit

Select from 16 bits or 32 bits.

Monitored current values are displayed in a selected bit unit.

(2) Display format of bit devices

The following are display formats that can be selected for bit devices.

Display format	Example
Vertical Indication	
Horizontal Indication (F-0) (decimal)	
Horizontal Indication (F-0) (hexadecimal)	
Horizontal Indication (0-F) (decimal)	
Horizontal Indication (0-F) (hexadecimal)	

(a) Display order

Select from vertical indication, horizontal indication (F-0), or horizontal indication (0-F).

Devices are displayed in a selected display order.

(b) Numeral system

Select from decimal or hexadecimal.

Bit devices with 16-point unit are displayed in a selected numeral system for horizontal indication.

12.8 Using Numerical Pad

This section explains the option function for entering numerals.
A numerical pad allows numeric values, such as device values, to be entered only with the mouse operation.

(1) Enabling/disabling numerical pad

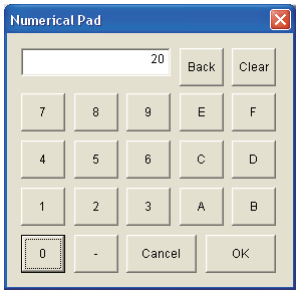
Operating procedure

1. **[Options]⇨ [Numerical Pad]**
   After the setting, a numerical pad is displayed by clicking a numeric value input field.
   The setting is disabled by selecting this menu again.

(2) Entering values using numerical pad

Screen display

Click a numeric value input field on a screen.



Operating procedure

1. **Click the buttons and enter a value.**
2. **Click the** OK **button.**
   The value is entered in the numeric value input field.

CHAPTER 13 DIAGNOSING BOARD STATUS

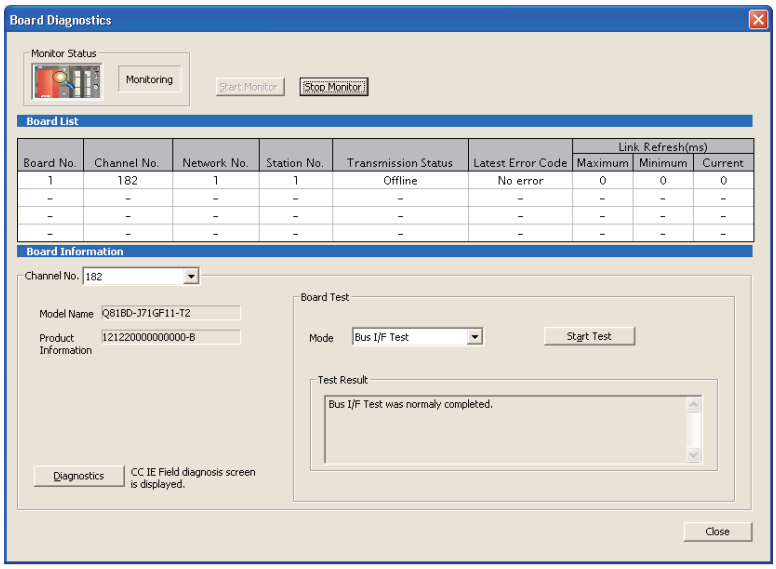
This chapter explains the methods for diagnosing the board or CC-Link IE Field Network status using CC IE Field Utility.

13.1 Diagnosing Board

This section explains a method for checking the board status.

Display contents

[Diagnostics] ⇨ [Board Diagnostics]



Display contents

Item		Description
Monitor Status		Display current monitor status.
Board List		-
	Board No.	Display the board number of each board.
	Channel No.	Display the channel number of each board.
	Network No.	Display the network number set for each board.
	Station No.	Display the station number set for each board.
	Transmission Status	Display communication status of each board.
	Latest Error Code	Display the latest error code of board.
	Link Refresh	Display the maximum, minimum, and current time of link refresh.
Board Information		-
	Channel No.	Select a board channel number of a test target or information display target.
	Model Name	Display a model name of the selected board.
	Product Information	Display product information of the selected board.
	Board Test	Execute a test on the selected board.

Operating procedure

1. **Click the [Start Monitor] button and start monitoring.**
   Click the [Stop Monitor] button to stop monitoring.
2. **Set a board channel number of a test target or information display target.**
3. **Select a test mode for "Mode".**
4. **Click the [Start Test] button.**
   Start the board test.
5. **A result is displayed in the "Test result" field.**

Screen button

- **[Diagnostics] button**
  Displays the "CC IE Field Network Diagnostics" screen. (☞ Page 145, Section 13.2.2)

13.2 Diagnosing CC-Link IE Field Network

This section explains a method for checking the CC-Link IE Field Network status of a selected board.
Target station by CC IE Field Utility for the CC-Link IE Field Network diagnostics is as follows.

Station type	Board, Module	Model name
Master station/ Local station	CC-Link IE Field Network board	Q80BD-J71GF11-T2 Q81BD-J71GF11-T2
	Master/local module	QJ71GF11-T2
Intelligent device station	Head module	LJ72GF15-T2
	Ethernet adapter module	NZ2GF-ETB

13.2.1 Selecting the diagnostics target

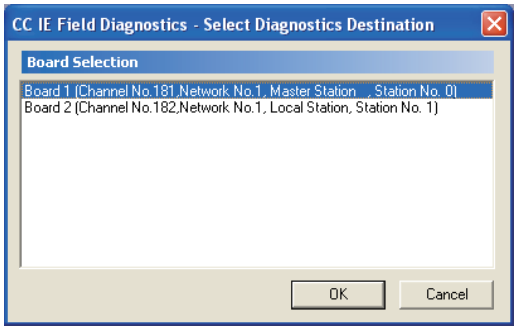
The following explains the target selection for CC-Link IE Field Network diagnostics.

The entire network status can be checked by connecting CC IE Field Utility to a master station. However, when a local station status cannot be checked because of a failure such as a cable disconnection, connect the utility to a local station directly.

(1) Selecting diagnostics target board

When two or more CC-Link IE Field Network boards are installed to a personal computer, the "Select Diagnostics Destination" screen as shown below is displayed before starting diagnostics.

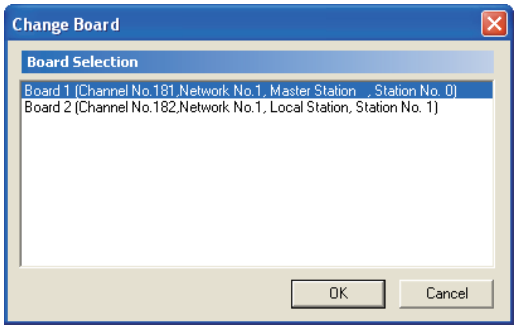
Select a board to be diagnosed and click the OK button.


CC IE Field Diagnostics - Select Diagnostics Destination
Board Selection
Board 1 (Channel No.181,Network No.1, Master Station , Station No. 0)
Board 2 (Channel No.182,Network No.1, Local Station, Station No. 1)
OK
Cancel

(2) Changing diagnostics target board

To change a board to be diagnosed during the CC-Link IE Field Network diagnostics, click the Change Board... button on the "CC IE Field Diagnostics" screen. The "Board Change" screen is displayed.

Select a board to be diagnosed, and click the OK button.

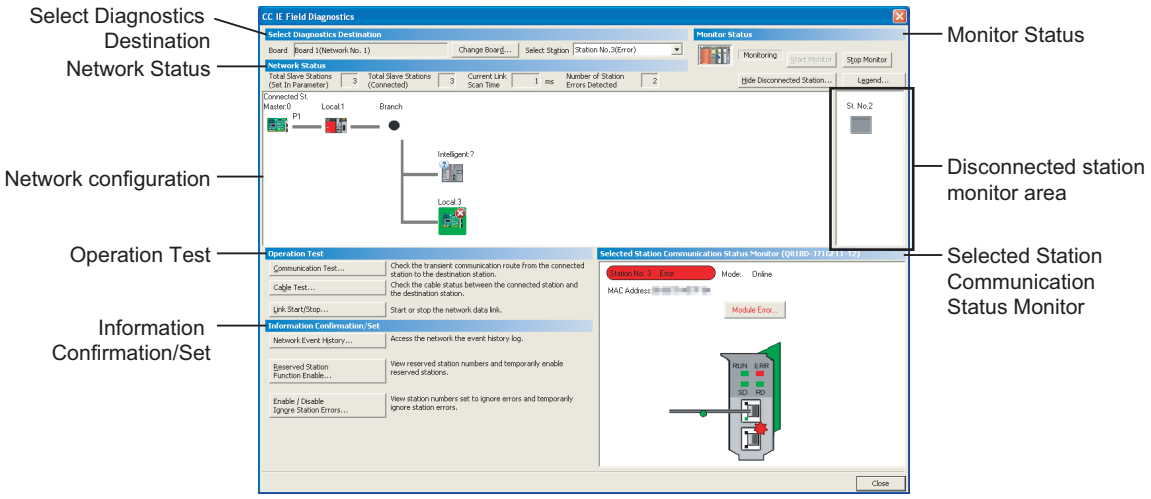

Change Board
Board Selection
Board 1 (Channel No.181,Network No.1, Master Station , Station No. 0)
Board 2 (Channel No.182,Network No.1, Local Station, Station No. 1)
OK
Cancel

13.2.2 Displaying diagnostics screen

The following explains the diagnostics screen of CC-Link IE Field Network.

Display contents

[Diagnostics] ⇨ [CC IE Field Diagnostics]



Display contents

○: Diagnosed △: Diagnosed with restrictions ×: Not diagnosed

Item	Diagnostics target		Restrictions	Reference
	Master station	Local station		
Select Diagnostics Destination	-	-	-	Page 148, (1) in this section
Monitor Status	-	-	-	Page 148, (2) in this section
Network Status, network configuration, Legends				
Display of network configuration and error status	○	○	-	Page 149, (3)in this section Page 149, (4)in this section Page 150, (5)in this section Page 153, (6)in this section
Display of disconnected cable and disconnected station	○	○		
Disconnected station monitor area	-	-		
Selected Station Communication Status Monitor				
Display of selected station status and error details	○	○	-	Page 153, (7)in this section
Slave station number setting (Only for slave stations whose number has not been set.)	○	×		-
Operation Test				
Communication Test	○	○	-	Page 156, Section 13.2.3
Cable Test	○	○	-	Page 157, Section 13.2.4
Link Start/Stop	○	△	For a local station, this function can only be performed on an own station.	Page 158, Section 13.2.5

Item	Diagnostics target		Restrictions	Reference
	Master station	Local station		
Information Confirmation/Set				
Network Event History	○	○	Events that can be collected differ according to the station type.	Page 159, Section 13.2.6
Reserved Station Function Enable	○	△	For a local station, reserved stations/temporary error invalid stations can only be displayed.	Page 161, Section 13.2.7
Temporary Error Invalid Station Setting/ Restore	○	△		Page 162, Section 13.2.8

Point

- Starting from the "Board Diagnostics" screen
  CC-Link IE Field Network diagnostics can also be started from the "Board Diagnostics" screen.
  (☞ Page 142, Section 13.1)

Operating procedure

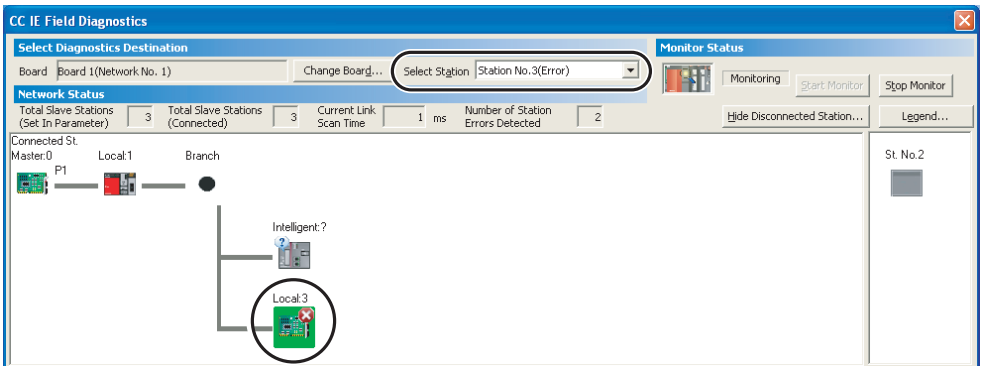
1. Select a station to be diagnosed from "Select Station" or "Network Status".

(☞ Page 148, (1) in this section, Page 150, (5) in this section)

- , , or is displayed on the module icon of the station where an error occurs.
- The module of the disconnected station whose data link is once established is displayed in black and white. ( )

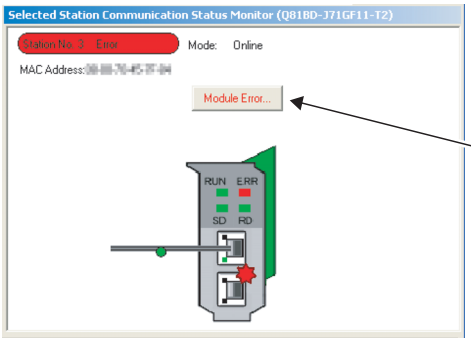
  The icon of the disconnected station, whose data link have never been established though the station is set in "Network Configuration Setting", is displayed on "Data link unperformed stations" located at the right of the screen.

  However, if the data link is once established, the following disconnected station is displayed on "Data link unperformed stations".
  - A station that was reconnected to a network after cable disconnection/insertion or power-off and power-on of the system and remains disconnected
  - Data link unexecuted stationsA disconnected station with the station icon deleted in the network map display area by clicking the Hide Disconnected Station... button
- is displayed on the icon of a cable where a communication error occurs. To check the details of the communication error, click the neighboring stations of .
- is displayed if the network is configured in ring topology although the loopback function is disabled.
- is displayed if the network is configured in star topology although the loopback function is enabled.
- is displayed if the network is incorrectly configured in ring topology.

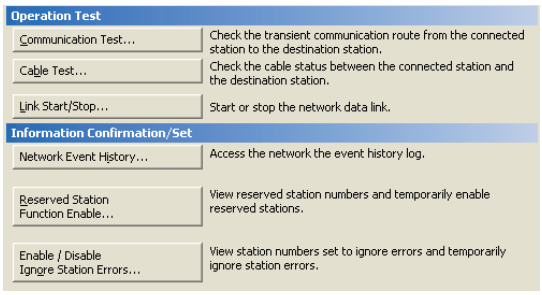


2. Status of a station selected in "Network Status" is displayed in "Selected Station Communication Status Monitor". (☞ Page 153, (7) in this section)

- The station status is displayed on the top of "Selected Station Communication Status Monitor".
- If an error occurs, a button indicating the error (such as Module Error... button) is displayed. Clicking the button allows checking of error details and corrective actions.

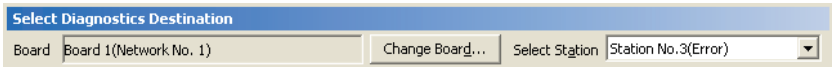


3. Various tests and operations can be performed from "Operation Test" and "Information Confirmation/Set" on the bottom left of the screen.
(☞ Page 156, Section 13.2.3 to Page 162, Section 13.2.8)


Operation Test
Communication Test...
Check the transient communication route from the connected station to the destination station.
Cable Test...
Check the cable status between the connected station and the destination station.
Link Start/Stop...
Start or stop the network data link.
Information Confirmation/Set
Network Event History...
Access the network the event history log.
Reserved Station Function Enable...
View reserved station numbers and temporarily enable reserved stations.
Enable / Disable Ignore Station Errors...
View station numbers set to ignore errors and temporarily ignore station errors.

(1) Select diagnostics target

Screen display



Display contents

Item	Description
Board	Display the selected diagnostics target board and the network number.
Select Station	Display the station number of the station selected in the network configuration. Set the station number to be selected.

Screen button

- Change Board... button

  Displays the "Change Board" screen. (Page 144, Section 13.2.1)

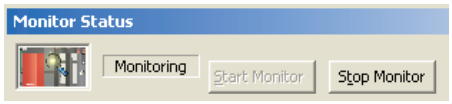
Point

- Selecting a target from "Network Status"
  A diagnostics target can also be selected from the network configuration of "Network Status".

(2) Monitor status

Display current monitoring status.

Screen display



Screen button

- Start Monitor button

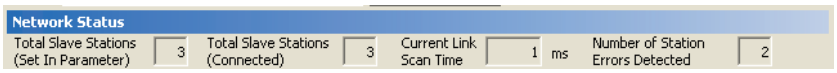
  Starts monitoring.

- Stop Monitor button

  Stops monitoring.

(3) Network status

Screen display



Display contents

Item	Description
Total Slave Stations	Display the total number of slave stations, the link scan time (in units of ms), and the number of stations error occurrences on the network being displayed.
Current Link Scan Time	
The Number of Stations Error Occurs	

(4) Legends

Screen button

- Legends... button

  Displays the explanation for icons displayed on the diagnostics screen.

Point

- Station type display of the icon

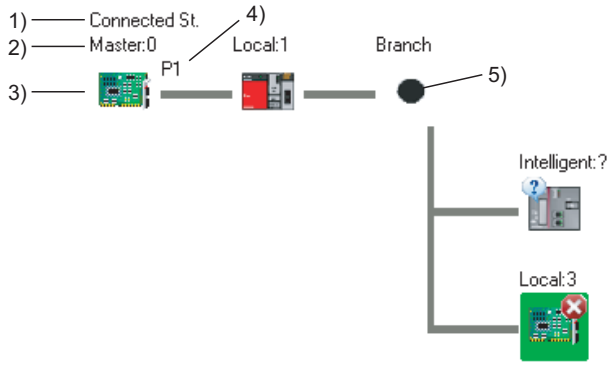
  When modules other than the target of the CC-Link IE Field Network diagnostics (Page 144, Section 13.2) are used in a local station, it is displayed as "Other Modules" ( ).

(5) Network configuration

CC-Link IE Field Network configuration and status of each station are displayed.

When the status of each station is not displayed, check if master stations or station numbers are not overlapped.

Screen display



Display contents

No.	Item	Description
1)	Connected Station	Indicate a station connected to the utility (own station).
2)	Network type, Station No.	Display a network type and station number. "?" is displayed when a station number has not been set. When the background of the characters is colored, setting such as reserved station specification has been configured to the relevant station.
3)	Icon	Display a module type and station status.
4)	Port	Display a port to which an Ethernet cable is connected.
5)	Divergence	A branch of star topology configured by using a network device such as a hub.

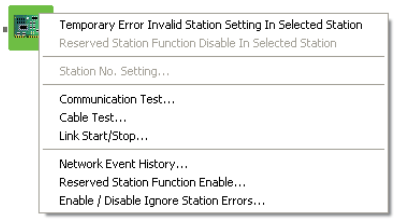
(a) Icon

By clicking an icon, the station is set as a selected station and details are displayed in "Selected Station Communication Status Monitor".

(A station with an error, such as master station overlap or station number overlap, details are not displayed as a selected station even by clicking the icon. In such case, execute the board diagnostics on the error station, and determine the error cause. When the error station is a module, determine the error cause using the system monitor function of GX Works2.)

Use the right and left arrow keys to move the focus and press the Space or Enter key to confirm the selected station.

The same functions as the functions of "Operation Test" and "Information Confirmation/Set" can be executed from the menus displayed by right-clicking the icon.


Temporary Error Invalid Station Setting In Selected Station
Reserved Station Function Disable In Selected Station
Station No. Setting...
Communication Test...
Cable Test...
Link Start/Stop...
Network Event History...
Reserved Station Function Enable...
Enable / Disable Ignore Station Errors...

The content of the displayed icons can be confirmed with the Legends... button.

(☞Page 149, Section 13.2.2 (4))

(b) When is displayed in "Network Status"

< The system does not contain a switching hub >

Although the loopback function is disabled, the network is configured in ring topology.

Perform the following measures.

- When not using the loopback function
  Disconnect an Ethernet cable connected to any stations on the network (either PORT1 or PORT2).
  The network topology will become a line topology and data link will start.
- When using the loopback function
  Enable the loopback function and rewrite the network parameter to the board.
  (☞ Page 85, Section 5.8)
  When a master/local module is used for the master station, check if the master/local module supports the loopback function.
  If the master/local module does not support the loopback function, replace the module with the one which supports the loopback function.

< The system contains a switching hub >

is displayed by any of the following causes.

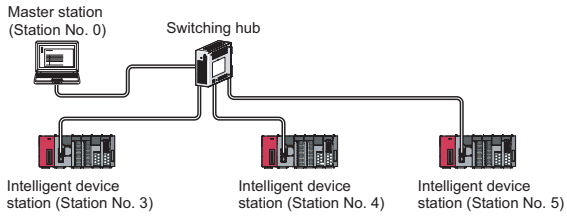
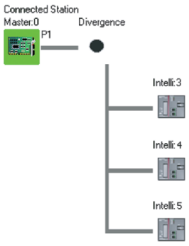
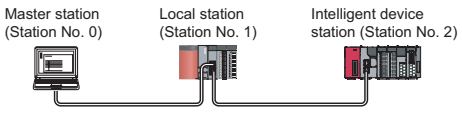
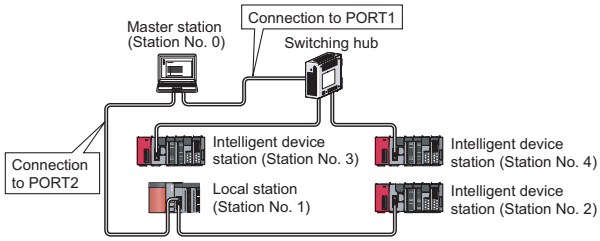
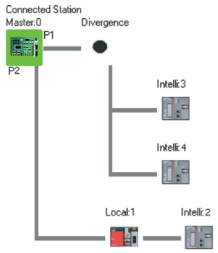
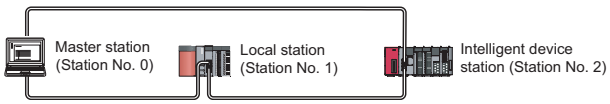
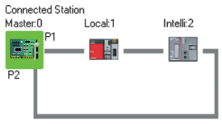
- Although the loopback function is disabled, the network is configured in ring topology.
- Although the loopback function is enabled, the network is configured in star topology.
- The network is incorrectly configured in ring topology.

Perform the following measures.

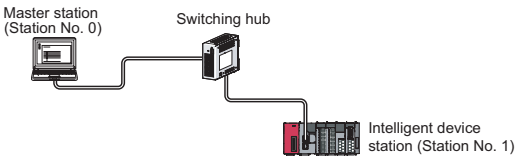
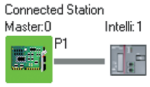
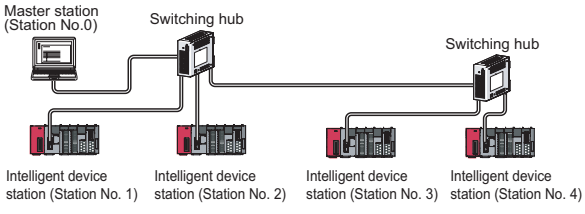
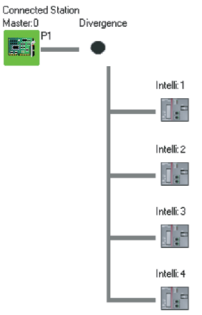
- Check if the loopback function setting is correctly configured. (☞ Page 85, Section 5.8)
  If incorrect, correct the network parameter and rewrite it to the board.
  When data link starts over the network, the action is successful.
- When the loopback function is disabled, perform the following measures.
  Disconnect an Ethernet cable connected to the switching hub and power cycle the hub. (Repeat this operation until data link starts over the network.)
  When data link starts over the network, check the network configuration by CC-Link IE Field Network diagnostics.
- When the loopback function is enabled, perform the following measures.
  Configure the network in ring topology without a switching hub.
  Connecting a switching hub will cause a problem such as data link failure.
  (☞ Page 26, Section 2.2 (1))
  When a master/local module is used for the master station, check if the master/local module supports the loopback function.
  If the master/local module does not support the loopback function, replace the module with the one which supports the loopback function.

(c) Display of network configuration

Network configuration is displayed according to the connection status.

Network configuration	Actual system configuration	Network configuration screen display
Star topology		
Line topology		
Star and line mixed		
Ring topology		

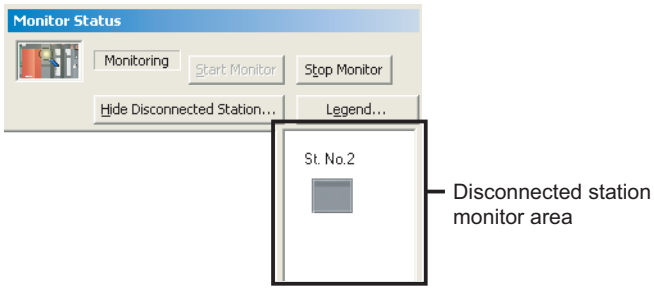
However, in the following cases, network configuration displayed in the network configuration screen differs from the actual configuration.

Network configuration	Actual system configuration	Network configuration screen display
Two stations are connected through a switching hub.		Branches are not displayed in the network configuration display area. 
Switching hubs are in cascade connection.		Only one branch is displayed. 

(6) Disconnected station monitor area

Displays a disconnected station that has been set in the network configuration settings but has not yet performed data link. However, even if a disconnected station had performed data link, it is displayed in this area in the following cases.

- A station that was reconnected to a network after cable disconnection/insertion or power-off and power-on of the system and remains disconnected
- Data link unexecuted stationsA disconnected station with the station icon deleted in the network map display area by clicking the Hide Disconnected Station... button



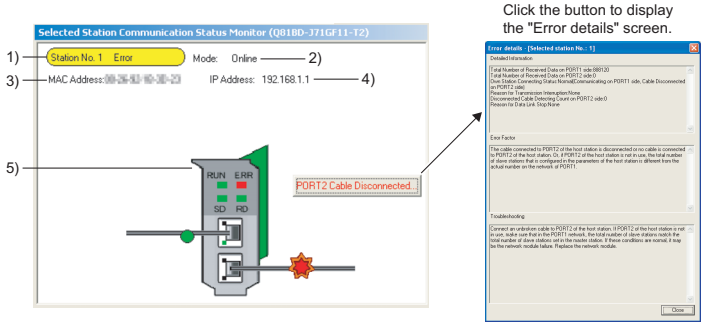
The icon indicates a station that has not yet performed data link.

Icons other than indicate stations that had performed data link before disconnection.

(7) Selected station communication status monitor

Display status of the selected station.

Screen display

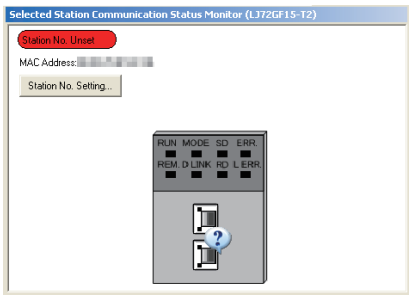


Display contents

No.	Item	Description
1)	Operating status	Display the station number and operating status. Station No. 1 No Error : Normal Station No. 1 Error : Error (Data link is continued.) (yellow) Station No. 1 Error : Error (Data link is stopped.) (red) Station No. Unset : Station number is not specified. (red)
2)	Mode	Display the mode. It is not displayed if a station number is not specified.
3)	MAC address	Display the MAC address.
4)	IP Address	Displays an IP address (only when it is set).
5)	LED	Display LED status and communication status of PORT1 and PORT2. Display the icon when the target station is disconnected.

Screen button

- Error buttons
  An error button is displayed when an error occurs on the CC-Link IE Field Network board or connection cable.
  The "Error details" screen is displayed by clicking the button.
- Station No. Setting... **button**
  This button is displayed when a station number is not specified for the selected station.
  The "Station number setting" screen for changing the station number is displayed by clicking the button.


Selected Station Communication Status Monitor (LJ72GF15-T2)
Station No. Unset
MAC Address:
Station No. Setting...
RUN MODE SD ERR.
REM. D LINK RD L ERR.

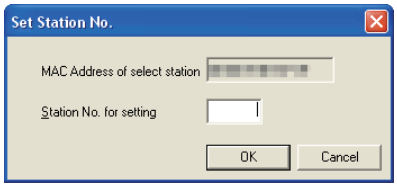
(a) Specifying station number

Specify a station number for the station number unspecified station when the connected station is a master station.

Screen display

[Diagnostics] ⇨ [CC IE Field Diagnostics]

⇨ "CC IE Field Network Diagnostics" screen ⇨ Station No. Setting... button



Operating procedure

1. Set the items on the screen.

Item	Description
MAC Address of select station	Display the MAC address of the selected station.
Station No. for setting	Specify a station number. Setting range: 1 to 120, numerals (0 to 9) in 3 digits only

2. Click the OK button.

Point

- Adding a station set in "Network Configuration Setting"
  The external device on a slave station outputs data input from the master station, simultaneously with configuration of the station number setting. Therefore, set the CPU module to STOP or check that outputs from the external device will not cause a problem beforehand.
- A station number is not specified to the slave station
  For a method for canceling the station number set to the slave station in the CC-Link IE Field Network Diagnostics, refer to the manual of slave station being used.

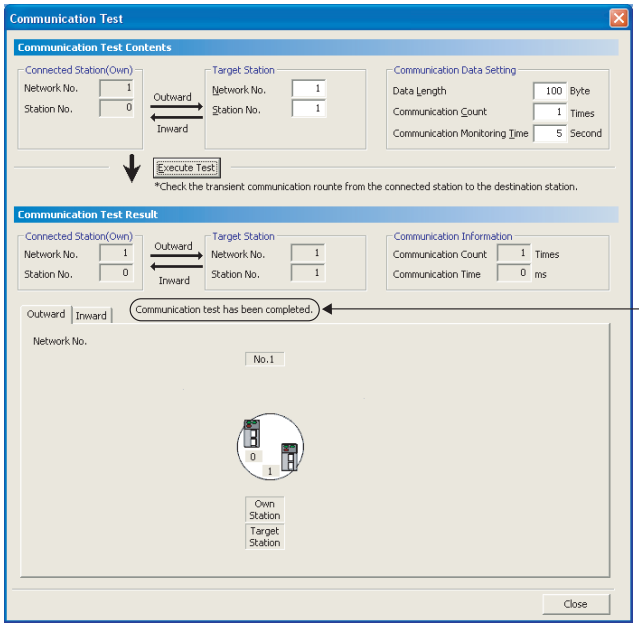
13.2.3 Communication test

Perform a communication test on CC-Link IE Field Network.

Screen display

[Diagnostics] ⇨ [CC IE Field Diagnostics]

⇨ "CC IE Field Diagnostics" screen ⇨ Communication Test... button



Presence or absence of errors on the communication test

Operating procedure

1. Set the items on the screen.

Item		Description
Communication Test Contents		Set the contents of the test to be executed.
	Connected Station (Own)	Display the network number and station number of the connected station.
	Target Station	Set the network number and station number.
	Communication Data Setting	Set the data length (1 to 900 bytes), the number of communications (1 to 100 times), and monitoring time (1 to 100 seconds) to execute the test.

2. Click the Execute Test button.

The communication test is executed according to the set contents.

Display contents

Item	Description
Communication Test Result	Display the result of inter-network communication test. Also in 'Presence or absence of errors on the communication test', displays whether the communication test has been executed normally. Networks and stations routed from the own station (connected station) to the target station are displayed in the <<Outward>> tab and those routed from the target station to the own station (connected station) are displayed in the <<Inward>> tab.

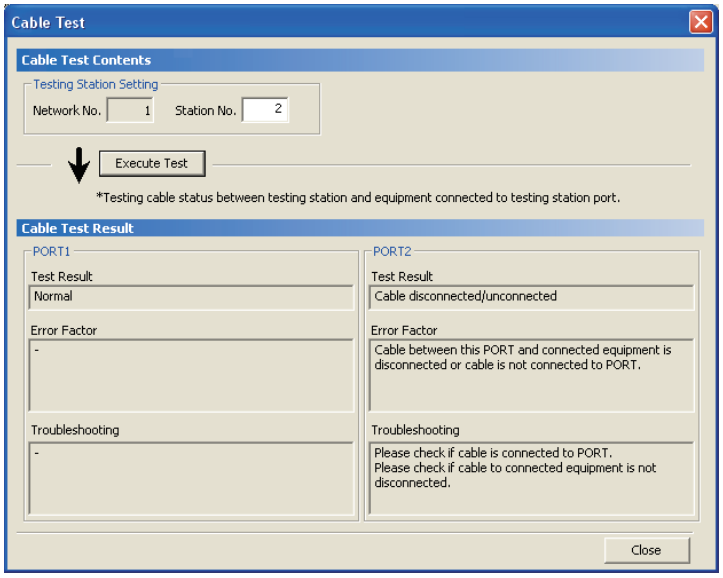
13.2.4 Cable test

Test the status of the cable connections between the testing station and the devices connected to the ports of the testing station.

Screen display

[Diagnostics] ⇨ **[CC IE Field Diagnostics]**

⇨ "CC IE Field Diagnostics" screen ⇨ Cable Test... button



Operating procedure

1. **Set the items on the screen.**

Item		Description
Cable Test Contents		-
	Testing Station Setting	Set the network number and station number of the station which executes the cable test.

2. **Click the** Execute Test **button.**

The cable test is executed on the testing station.

Display contents

Item	Description
Cable Test Result	Display the cable test result, error factor, and troubleshooting of each port.

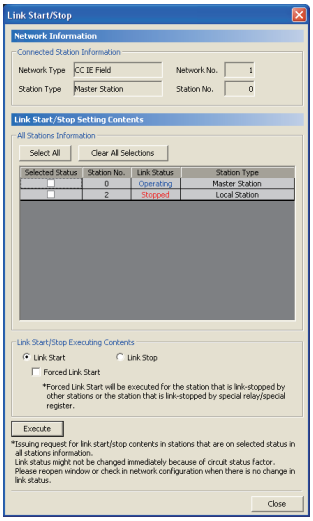
13.2.5 Link start/stop

Start/stop the data link of a specified station. Use this function for debugging purposes to stop the station from receiving data from other stations and sending its own data.

Screen display

[Diagnostics] ⇨ **[CC IE Field Diagnostics]**

⇨ "CC IE Field Diagnostics" screen ⇨ Link Start/Stop... button



Operating procedure

1. Set the items on the screen.

Item		Description
Network Information		-
	Connected Station Information	Display the network information of the connected station.
Link Start/Stop Setting Contents		-
	All Stations Information	Display the link status of all stations on the same network which are performing the data link with the connected station. Target stations of the link start/stop operation can be selected in "Selected Status".
	Link Start/Stop Executing Contents	Select "Link Start"/"Link Stop". To forcibly start the data link of a station which has been stopped by another station or a special relay/special register, check "Forced Link Start".

2. Click the Execute button.

The link start/stop is executed for all selected stations at once.

When the process is completed, "Selected Status" are cleared and the contents of "Link Status" are updated.

Screen button

- Select All button

  Selects all stations displayed in the list.

- Cancel All Selections button

  Cancels the selection status of all stations selected in the list.

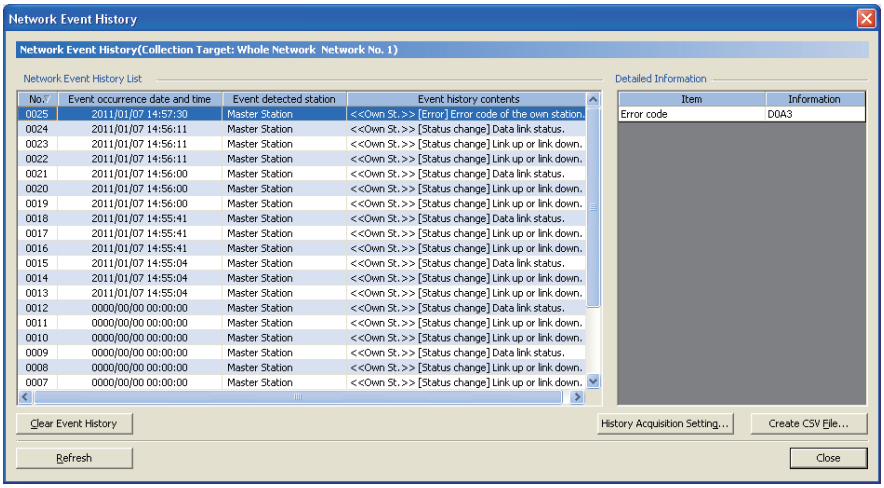
13.2.6 Network event history

Display a list of event history occurred on the own station and on the network.

Screen display

[Diagnostics] ⇨ **[CC IE Field Diagnostics]**

⇨ "CC IE Field Diagnostics" screen ⇨ Network Event History... button

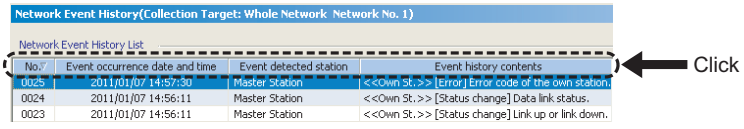

Network Event History
Network Event History(Collection Target: Whole Network Network No. 1)
Network Event History List
Detailed Information
No. | Event occurrence date and time | Event detected station | Event history contents
0025 | 2011/01/07 14:57:30 | Master Station | <<Own St.>> [Error] Error code of the own station.
0024 | 2011/01/07 14:56:11 | Master Station | <<Own St.>> [Status change] Data link status.
0023 | 2011/01/07 14:56:11 | Master Station | <<Own St.>> [Status change] Link up or link down.
0022 | 2011/01/07 14:56:11 | Master Station | <<Own St.>> [Status change] Link up or link down.
0021 | 2011/01/07 14:56:00 | Master Station | <<Own St.>> [Status change] Data link status.
0020 | 2011/01/07 14:56:00 | Master Station | <<Own St.>> [Status change] Link up or link down.
0019 | 2011/01/07 14:56:00 | Master Station | <<Own St.>> [Status change] Link up or link down.
0018 | 2011/01/07 14:55:41 | Master Station | <<Own St.>> [Status change] Data link status.
0017 | 2011/01/07 14:55:41 | Master Station | <<Own St.>> [Status change] Link up or link down.
0016 | 2011/01/07 14:55:41 | Master Station | <<Own St.>> [Status change] Link up or link down.
0015 | 2011/01/07 14:55:04 | Master Station | <<Own St.>> [Status change] Data link status.
0014 | 2011/01/07 14:55:04 | Master Station | <<Own St.>> [Status change] Link up or link down.
0013 | 2011/01/07 14:55:04 | Master Station | <<Own St.>> [Status change] Link up or link down.
0012 | 0000/00/00 00:00:00 | Master Station | <<Own St.>> [Status change] Data link status.
0011 | 0000/00/00 00:00:00 | Master Station | <<Own St.>> [Status change] Link up or link down.
0010 | 0000/00/00 00:00:00 | Master Station | <<Own St.>> [Status change] Link up or link down.
0009 | 0000/00/00 00:00:00 | Master Station | <<Own St.>> [Status change] Data link status.
0008 | 0000/00/00 00:00:00 | Master Station | <<Own St.>> [Status change] Link up or link down.
0007 | 0000/00/00 00:00:00 | Master Station | <<Own St.>> [Status change] Link up or link down.
Item | Information
Error code | D0A3
Clear Event History
History Acquisition Setting...
Create CSV File...
Refresh
Close

Display contents

Item	Description
Network Event History	-
Network Event History List	Display the list of network event history. Each column can be sorted in ascending/descending order by clicking on the column header.
Detailed Information	Display the detailed information of an event selected in "Network Event History List".

Point

- The number of displayed events
  Up to 1000 events can be displayed. When the maximum is reached, the events will be erased in sequence from the oldest one and the latest events will be displayed.
- Saving event history data
  Event history data are deleted by power cycling the system. To hold event history data, store them in a CSV file.
- Sorting event history data
  Click each title to sort events.

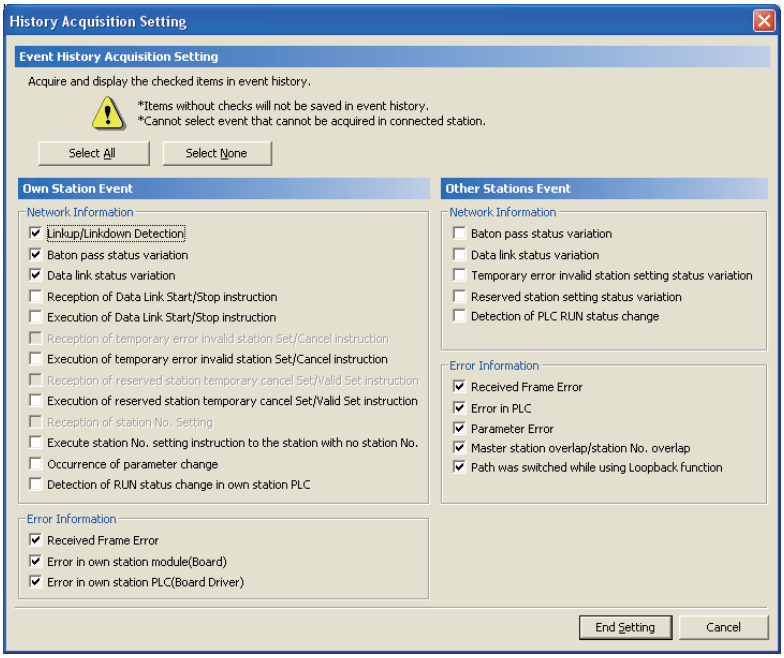

Network Event History(Collection Target: Whole Network Network No. 1)
Network Event History List
No. | Event occurrence date and time | Event detected station | Event history contents
0025 | 2011/01/07 14:57:30 | Master Station | <<Own St.>> [Error] Error code of the own station.
0024 | 2011/01/07 14:56:11 | Master Station | <<Own St.>> [Status change] Data link status.
0023 | 2011/01/07 14:56:11 | Master Station | <<Own St.>> [Status change] Link up or link down.
Click

Screen button

- History Acquisition Setting... button

  Displays the "History Acquisition Setting" screen.

  Select events to be acquired.


History Acquisition Setting
Event History Acquisition Setting
Acquire and display the checked items in event history.
*Items without checks will not be saved in event history.
*Cannot select event that cannot be acquired in connected station.
Select All
Select None
Own Station Event
Network Information
Linkup/Linkdown Detection
Baton pass status variation
Data link status variation
Reception of Data Link Start/Stop instruction
Execution of Data Link Start/Stop instruction
Reception of temporary error invalid station Set/Cancel instruction
Execution of temporary error invalid station Set/Cancel instruction
Reception of reserved station temporary cancel Set/Valid Set instruction
Execution of reserved station temporary cancel Set/Valid Set instruction
Reception of station No. Setting
Execute station No. setting instruction to the station with no station No.
Occurrence of parameter change
Detection of RUN status change in own station PLC
Error Information
Received Frame Error
Error in own station module(Board)
Error in own station PLC(Board Driver)
Other Stations Event
Network Information
Baton pass status variation
Data link status variation
Temporary error invalid station setting status variation
Reserved station setting status variation
Detection of PLC RUN status change
Error Information
Received Frame Error
Error in PLC
Parameter Error
Master station overlap/station No. overlap
Path was switched while using Loopback function
End Setting
Cancel

- Clear Event History button

  Clears the network event history exists in the board.

- Create CSV File... button

  Saves the network event history in CSV file format.

Remark

- The board automatically saves event history data on the flash ROM.
- Auto-save may fail if it operates after the board is reset or powered off and later on until initial processing is completed. If failed, the event, “Invalid event history data." is displayed in “Event history contents”.
- An event, generated one second before the board is reset or powered off, is not saved to event history.

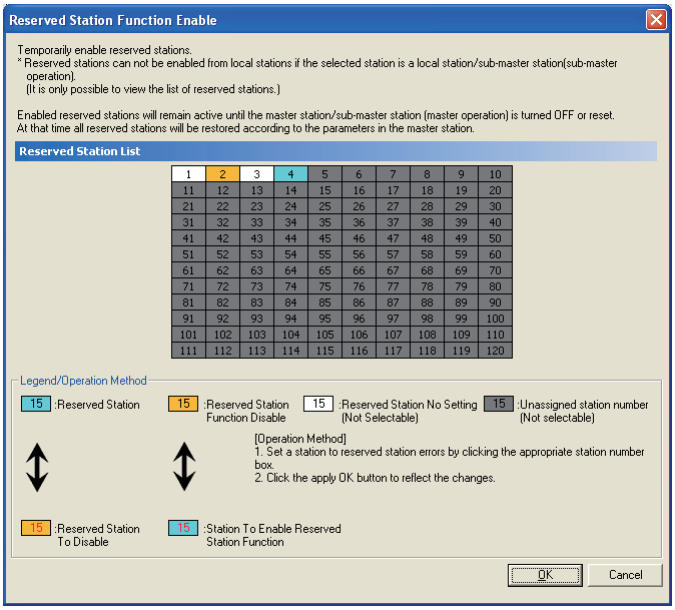
13.2.7 Reserved station function enable

Cancel slave stations temporarily and reserve the slave station again.
This function cannot be performed when the connected station is a local station.

Screen display

[Diagnostics] ⇨ **[CC IE Field Diagnostics]**

⇨ "CC IE Field Diagnostics" screen ⇨ Reserved Station Function Enable... button


Reserved Station Function Enable
Temporarily enable reserved stations.
* Reserved stations can not be enabled from local stations if the selected station is a local station/sub-master station(sub-master operation).
(It is only possible to view the list of reserved stations.)
Enabled reserved stations will remain active until the master station/sub-master station (master operation) is turned OFF or reset.
At that time all reserved stations will be restored according to the parameters in the master station.
Reserved Station List
Legend/Operation Method
:Reserved Station
:Reserved Station Function Disable
:Reserved Station No Setting (Not Selectable)
:Unassigned station number (Not selectable)
[Operation Method]
1. Set a station to reserved station errors by clicking the appropriate station number box.
2. Click the apply OK button to reflect the changes.
:Reserved Station To Disable
:Station To Enable Reserved Station Function
OK
Cancel

Operating procedure

1. **Select reserved stations to be canceled temporarily or reserved again from "Reserved Station List".**
2. **Click the** End Setting **button.**
   The selected reserved stations are canceled temporarily or reserved again.
   When the process is completed, the contents of "Reserved Station List" are updated.

Point

- Parameter setting
  The network parameter does not reflect the temporary cancellation of reserved station specification.
- Resetting master station or turning OFF the system
  The temporary cancellation of reserved station specification is reset and the slave station returns to the status set by the master station's network parameter.
- Disconnecting a station for which reservation has been temporarily cancelled
  If the master station is reset, the master station and local stations will differ in the following:
  - ERR. LED status
  - Data in Reserved station specification (SW00C0 to SW00C7) and Reserved station function disable status (SW0180 to SW0187)

  The difference can be corrected by the following procedure.
  1. Reconnect the disconnected station.
  2. Temporarily cancel the reservation and then reserve the station again.

13.2.8 Enable/Disable ignore station errors

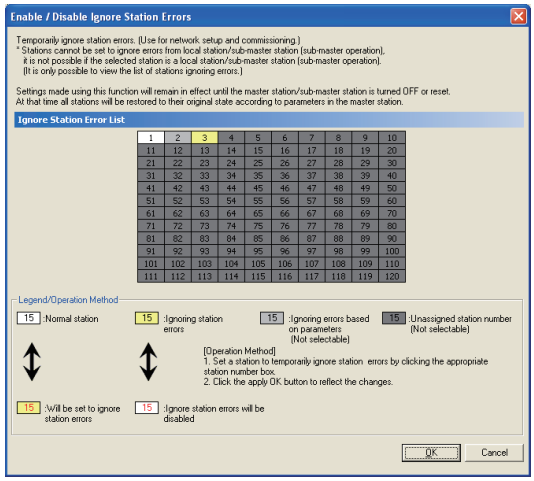
Set/restore temporary error invalid stations.

This function can be performed when the connected station is a master station.

Screen display

[Diagnostics] ⇨ **[CC IE Field Diagnostics]**

⇨ "CC IE Field Diagnostics" screen ⇨ Enable / Disable Ignore Station Errors... button


Enable / Disable Ignore Station Errors
Temporarily ignore station errors. (Use for network setup and commissioning.)
* Stations cannot be set to ignore errors from local station/sub-master station (sub-master operation).
it is not possible if the selected station is a local station/sub-master station (sub-master operation).
(It is only possible to view the list of stations ignoring errors.)
Settings made using this function will remain in effect until the master station/sub-master station is turned OFF or reset.
At that time all stations will be restored to their original state according to parameters in the master station.
Ignore Station Error List
Legend/Operation Method
:Normal station
:Ignoring station errors
:Ignoring errors based on parameters (Not selectable)
:Unassigned station number (Not selectable)
[Operation Method]
1. Set a station to temporarily ignore station errors by clicking the appropriate station number box.
2. Click the apply OK button to reflect the changes.
:Will be set to ignore station errors
:Ignore station errors will be disabled
OK
Cancel

Operating procedure

1. **Select stations to be set/restored as temporary error invalid stations from "Error Invalid Station List".**
2. **Click the** End Setting **button.**

   The temporary error invalid stations are set/restored.

   When the process is completed, the contents of "Error Invalid Station List" are updated.

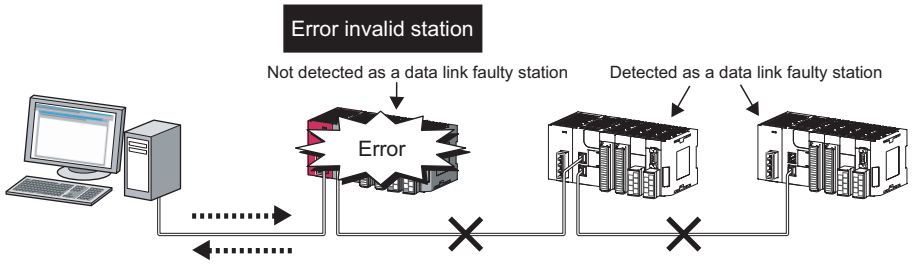
Point

- Stations to Station for which temporary error invalid station setting cannot be configured

  When reservation for a slave station is temporarily canceled, temporary error invalid station setting cannot be configured for the station.

- An error invalid station is used in line topology.

  In the following cases, the station is not detected as a data link faulty station. However, stations subsequent to the disconnected station are detected as a data link faulty station.



- Setting in the "Network status" on the "CC IE Field Diagnostics" screen

  The temporary error invalid station setting/restoration can be performed from the network configuration of "Network Status" on the "CC IE Field Diagnostics" screen.

  The menu is displayed by right-clicking the target station. (☞ Page 150, Section 13.2.2 (5)(a))

Point

- Parameter setting
  The network parameter does not reflect temporary error invalid station setting.
- Resetting the master station or powering off the system
  Temporary error invalid station setting is reset and the slave station returns to the status set by the master station's network parameter.
- Disconnecting a station for which temporary error invalid station setting has been configured
  If the master station is reset, the master station and local stations will differ in the following:
  - ERR. LED status
  - Temporary error invalid station setting (SW00E0 to SW00E7)

  The difference can be corrected by the following procedure.
  1. Reconnect the disconnected station.
  2. Configure temporary error invalid station setting and then cancel the setting

CHAPTER 14 MELSEC DATA LINK LIBRARY

This chapter explains the features of the functions provided by the library.
These functions are used when creating a user program to communicate with a programmable controller CPU.
With these functions, a user can communicate without being aware of hardware types or communication protocols on the target.

The following table shows the list of MD functions which are provided with the software package.

Function name	Description
mdOpen	Open a communication line.
mdClose	Close a communication line.
mdSendEx	Batch write devices. (Extended function*1)
	Send data. (SEND function) (Extended function*1)
mdReceiveEx	Batch read devices. (Extended function*1)
	Receive data. (RECV function) (Extended function*1)
mdRandWEx	Write devices randomly. (Extended function*1)
mdRandREx	Read devices randomly. (Extended function*1)
mdDevSetEx	Set a bit device. (Extended function*1)
mdDevRstEx	Reset a bit device. (Extended function*1)
mdTypeRead	Read the type of programmable controller CPU.
mdControl	Remote operation of RUN/STOP/PAUSE.
mdWaitBdEvent	Wait for an event occurrence.
mdBdRst	Reset the own board.
mdBdModSet	Set the mode of the own board.
mdBdModRead	Read the mode of the own board.
mdBdLedRead	Read the LED information of the own board.
mdBdSwRead	Read the switch status of the own board.
mdBdVerRead	Read the version information of the own board.
mdInit	Refresh the programmable controller device address.
mdSend	Batch write devices.
	Send data. (SEND function)
mdReceive	Batch read devices.
	Receive data. (RECV function)
mdRandW	Write devices randomly.
mdRandR	Read devices randomly.
mdDevSet	Set a bit device.
mdDevRst	Reset a bit device.

*1 : A function in which the access range is extended according to the extension of the device points at the access target.
It is accessible to all device numbers.
Use extended functions when creating a new program.

Point

- Details on MELSEC data link library
  For details on the functions, refer to the following manual.
  MELSEC Data Link Library Reference Manual

CHAPTER 15 PROGRAMMING

This chapter explains CC-Link IE Field Network programming.

15.1 Precautions on Programming

This section explains precautions for creating CC-Link IE Field Network programs.

(1) Cyclic transmission programs

For cyclic transmission programs, interlock with the following link special relay (SB) and link special register (SW). (☞ Page 224, Appendix 3, Page 236, Appendix 4)

- Data link status (own station) (SB0049)
- Data link status (each station) (SW00B0 to SW00B7)

(2) Transient transmission programs

For transient transmission programs, interlock with the following link special relay (SB) and link special register (SW). (☞ Page 224, Appendix 3,Page 236, Appendix 4)

- Baton pass status (own station) (SB0047)
- Baton pass status (each station) (SW00A0 to SW00A7)

CHAPTER 16 TROUBLESHOOTING

This chapter explains the identification of the causes and corrective actions when an error occurred.
Perform the troubleshooting in the following order in case of trouble.

(1) Basic checking procedure

Check if there is the corresponding error symptom written in "Error Examples". (☞ Page 167, Section 16.1)
If the corresponding error could not be found, check the cause by following the procedure shown below.

1. **Check if all the boards installed on a personal computer are displayed with the utility.**

- Checking channel numbers (☞ Page 191, Section 16.7.8)
- Checking operations with board diagnostics (☞ Page 191, Section 16.7.9)

2. **Check the LED display of the board.**

- Check the LED status (☞ Page 192, Section 16.7.11)

3. **Check the error occurring at the utility.**

- Checking operations with tests (☞ Page 191, Section 16.7.10)
- Checking network status with CC-Link IE Field Network diagnostics (☞ Page 196, Section 16.7.12)
- Checking network status with monitoring link special relays (SB) and link special registers (SW) (☞ Page 197, Section 16.7.13)

4. **Check the access target device.**

Check whether the system is performing as set on the parameters and programs by checking the performance of link device communication, or transient transmission/reception.

- Checking communication status with monitoring access target device (☞ Page 197, Section 16.7.14)

5. **Check the user program.**

- Check the operating environment (☞ Page 187, Section 16.7.4)
- Check the arguments of the communication function
  📖 MELSEC Data Link Library Reference Manual
- Check the returned values of the communication function (☞ Page 199, Section 16.9)

(2) When error cannot be solved

If the troubleshooting above does not help, refer to ☞ Page 198, Section 16.8

16.1 Error Examples

The following tables show examples of the major error under the specific conditions.
When the corresponding error occurred, refer to the troubleshooting of each error.

(1) Installation of the software package

Error	Description	Reference
Installation of the software package has failed.	Installation aborted.	• Page 169, Section 16.2.1
	Driver is not installed.	• Page 173, Section 16.2.4
	A " ! " mark is displayed next to the icon of the drive on the Device Manager screen.	• Page 188, Section 16.7.6
Uninstallation of the software package has failed.	The software package is not uninstalled despite the uninstallation completed message has been displayed.	• Page 169, Section 16.2.2

(2) Personal computer and utility

Error	Description	Reference
Personal computer does not start or shuts down.	The system error screen has been displayed	• Page 175, Section 16.3.1
Personal computer shuts down.	The operating system down or system reset occurred when the system is in operation.	
	The system down occurred when deleting or disabling the driver.	• Page 175, Section 16.3.1
Utility does not start up.	There is no icon in the start menu of the operating system. The utility does not start up by clicking the icon.	• Page 176, Section 16.3.2
The screen or operation is abnormal.	The utility screen is not displayed normally. The utility cannot be operated.	• Page 176, Section 16.3.3
The corrective action displayed on the screen is not effective.	An unexpected screen is displayed. The corrective action displayed on the screen is not effective.	• Page 177, Section 16.3.4
Personal computer operates slowly.	Mouse or keyboard operates slowly. Other application operates slowly. CPU utilization of personal computer is high. Operation of sound function is unstable.	• Page 178, Section 16.3.5

(3) Board and driver

Error	Description	Reference
An WDT error occurred.	A hardware failure or a board WDT error has occurred. (RUN LED is OFF.)	• Page 178, Section 16.4.1
	A driver WDT error occurred. (RUN LED is flashing and RD LED is ON.)	• Page 179, Section 16.4.2
Driver does not activate	The driver cannot communicate with the board. (RUN LED is OFF.)	• Page 179, Section 16.4.3
An bus error occurred	PCI bus/PCI Express bus error occurred. (RUN LED is flashing and SD LED is ON.)	• Page 179, Section 16.4.4

(4) Network access

Error	Description	Reference
An error occurred in the network data link.	The communication error occurred. (ERR.LED is ON/Flashing.)	• Page 180, Section 16.5.1
	User program cannot be accessed to CPU module other than QCPU.	• Page 181, Section 16.5.2
	The board cannot perform communication while executing an user program occasionally.	• Page 181, Section 16.5.3
	Station is disconnected from the network unexpectedly. • The connected station is disconnected unexpectedly. • The data cannot be read/written from/to the accessed station. • Communication with accessed station occasionally fails. • A relevant station repeats network connection and disconnection.	• Page 181, Section 16.5.4
An error occurred while accessing the device via a network.	The cyclic transmission cannot be performed. • The output of the own station does not reach the accessed station. • The change of the input from the accessed station does not reach the own station. • An unexpected value is set to the link device.	• Page 183, Section 16.6.1
	The transient transmission cannot be performed. • The data cannot be written to the accessed station. • The data cannot be read from the accessed station. • The data cannot be monitored with the utility. • The data cannot be read/written while accessing to the device using a communication function with a user program.	• Page 184, Section 16.6.2

16.2 Troubleshooting for Installation/Uninstallation

The following explains the troubleshooting for error at installation or uninstallation.

- Installation failed. (☞ Page 169, Section 16.2.1)
- Uninstallation failed. (☞ Page 169, Section 16.2.2)

16.2.1 Installation failed

When the installation is aborted or failed, reinstall the utility by the following procedure.

1. **Check the installation/uninstallation precautions. (☞ Page 87, Section 6.1)**
2. **Restart the personal computer.**
3. **If the utility can be uninstalled, uninstall it. (☞ Page 90, Section 6.3)**
   After the uninstallation, restart the personal computer.
4. **Install the utility again by following the installation procedure.**
   When the screen whosemeasurement is not sure is displyed.
   (☞ Page 170, Section 16.2.3, ☞ Page 177, Section 16.3.4)
5. **If the personal computer does not operate normally after the reinstallaion, check if the personal computer has any problems.**
   - Operating Environment (☞ Page 187, Section 16.7.4)
   - Checking personal computer and operating system (☞ Page 187, Section 16.7.5)

If any of the above troubleshooting do not solve the error, refer to ☞ Page 198, Section 16.8.

16.2.2 Uninstallation failed

When the uninstallation is failed, uninstall the utility after the reinstallation by the following procedure.

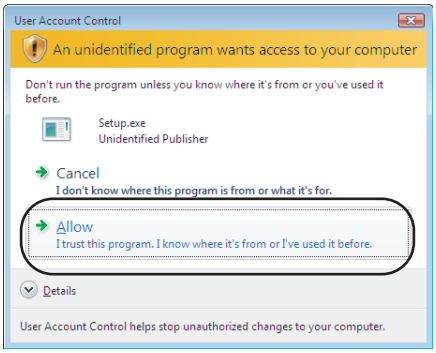
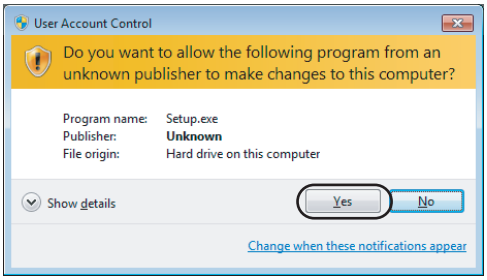
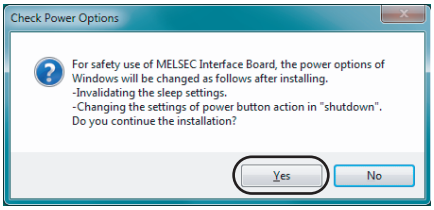
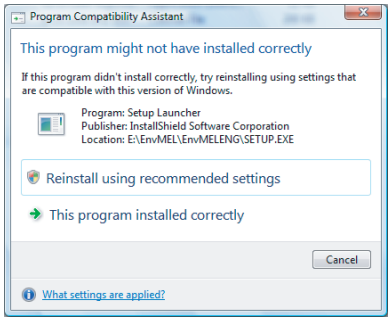
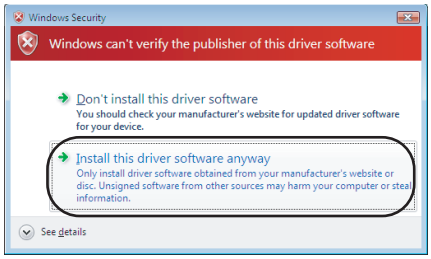
1. **Check the installation/uninstallation precautions. (☞ Page 87, Section 6.1)**
2. **Insert the CD-ROM in the CD-ROM drive.**
3. **Display the "Run" screen from the WindowsR Start Menu or Quick Access Menu.**
4. **Append "-A" and execute "Disk1\Setup.exe" of the CD-ROM.**
5. **Install the utility again by following the installation procedure.**
6. **Perform the uninstallation.**
7. **If the utility cannot be uninstalled normally, check if the personal computer has any problems**
   - Operating Environment (☞ Page 187, Section 16.7.4)
   - Checking personal computer and operating system (☞ Page 187, Section 16.7.5)

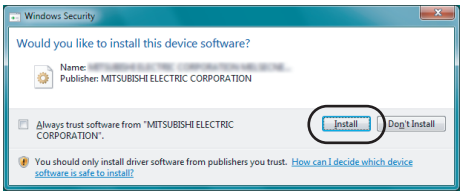
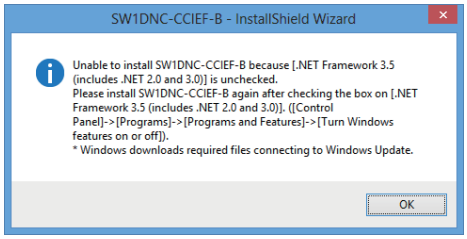
If any of the above troubleshooting do not solve the error, refer to ☞ Page 198, Section 16.8.

16.2.3 Action displayed on the screen is not effective while installation

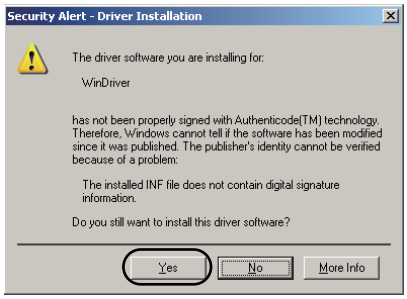
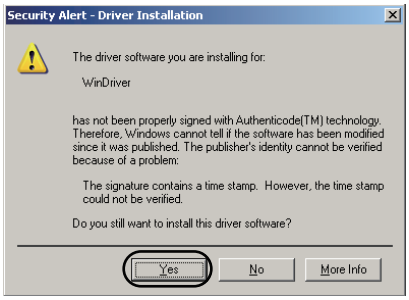
The action when the screen is displayed is shown below.

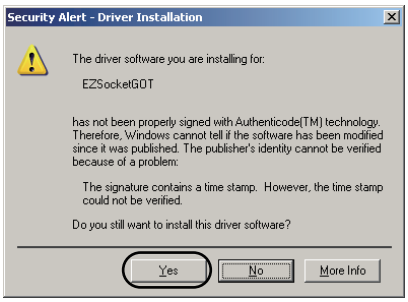
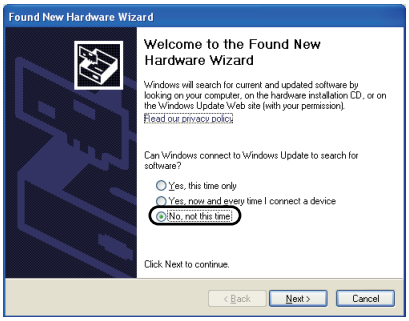
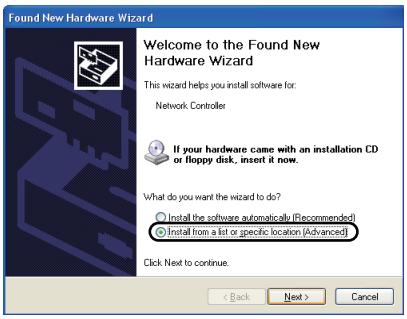
(1) Using Windows Vista® / Windows Server® 2008 / Windows Server® 2008 R2/ Windows® 7 / Windows Server® 2012 / Windows® 8

screens	procedure
 	This screen is displayed when user account control is enabled. Click "Allow" or the Yes button.
	Click the Yes button. MELSECPowerManager is installed and the Windows® Power Options settings are changed automatically. For details of MELSECPowerManager, refer to the following appendix. Page 271, Appendix 13
	If this screen is displayed during the installation or at the installation completion, click "This program installed correctly". If this screen is displayed when the installation is aborted, click the Cancel button and close the screen. Do not select "Reinstall using recommended settings". An incorrect module may be installed.
	Click "Install this driver software anyway".

screens	procedure
	Confirm the publisher is "MITSUBISHI ELECTRIC CORPORATION", and click the Install button. This screen may be displayed a couple of times.
	The message is displayed when .NET Framework 3.5 (including .NET 2.0 and 3.0) is set to disabled. Reinstall the utility after searching the "Turn Windows features on or off" on the control panel and enabling the function of ".NET Framework 3.5 (including .NET 2.0 and 3.0). The procedure when .NET Framework 3.5 (including .NET 2.0 and 3.0) is disabled is the same procedure as MELSOFT products. For details of the procedure, refer to the technical bulletin FA-A-0153.

(2) Using Windows® XP / Windows Server® 2003 R2

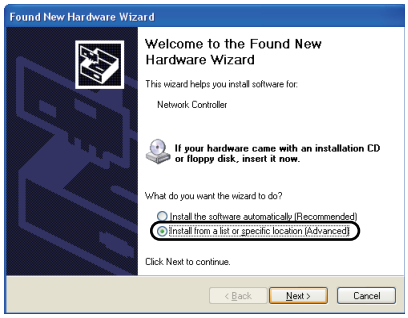
screens	procedure
	This screen is displayed at the first installation. Click the Continue Anyway button. The operation test has been conducted by Mitsubishi. (Problems do not occur after the installation.) The following screen may appear behind another screen. Then, press the Alt + Tab keys to bring it to the front.
 	For Windows Server® 2003 R2, one of the screens shown on the left is displayed at the first installation. Click the Yes button.

	For Windows Server® 2003 R2, the screen shown on the left is displayed. Click the Yes button and continue the installation.
	For operating system of Windows® XP Service Pack 2 or later, the confirmation screen for connection to Windows® Update may be displayed. Select "No, not this time" and click the Next button.
	The "Found New Hardware Wizard" screen is displayed after the board installation. Refer to Section 16.2.4 and install the driver. When the utility has been started up, restart the utility after installing the driver.

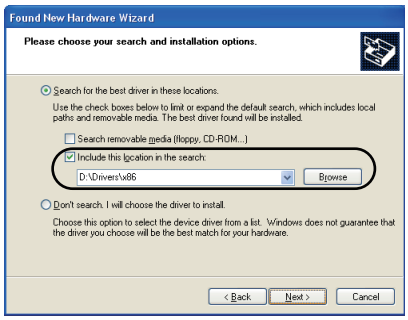
16.2.4 When the driver is not installed

The driver is installed automatically when installing the board on the personal computer after installing the software package.

For Windows XP® and Windows Server 2003® R2, the following operation is required.


Found New Hardware Wizard
Welcome to the Found New Hardware Wizard
This wizard helps you install software for:
Network Controller
If your hardware came with an installation CD or floppy disk, insert it now.
What do you want the wizard to do?
Install the software automatically (Recommended)
Install from a list or specific location (Advanced)
Click Next to continue.
< Back
Next >
Cancel

↓


Found New Hardware Wizard
Please choose your search and installation options.
Search for the best driver in these locations.
Use the check boxes below to limit or expand the default search, which includes local paths and removable media. The best driver found will be installed.
Search removable media (floppy, CD-ROM...)
Include this location in the search:
D:\Drivers\x86
Browse
Don't search. I will choose the driver to install.
Choose this option to select the device driver from a list. Windows does not guarantee that the driver you choose will be the best match for your hardware.
< Back
Next >
Cancel

↓

(End)

1. **The "Found New Hardware Wizard" screen is displayed after installing the board and starting up the personal computer. Select "Install from a list or specific location (Advanced)" and click the Next > button**

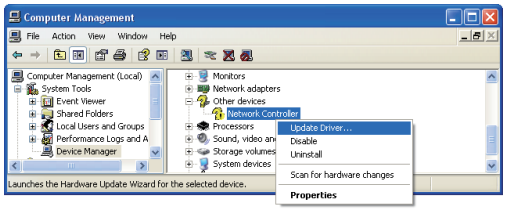
2. **Select "Search for the best driver in these locations".**

<For 32-bit version operating system*1>
Check "Include this location in the search" and specify "\Drivers\x86" of the CD-ROM drive to be used.
(Example: "D:\Drivers\x86")

<For 64-bit version operating system*1>
Check "Include this location in the search" and specify "\Drivers\x64" of the CD-ROM drive to be used.
(Example: "D:\Drivers\x64")

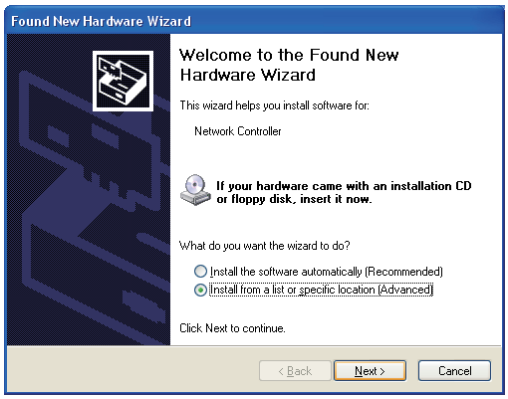
*1: The operating system can be checked by Windows system information. For details, refer to the Microsoft® Knowledge Base.
http://support.microsoft.com/kb/827218/ (As of August 2013)

When the "Found New Hardware Wizard" screen is not displayed automatically after the board installation, update the driver on the "Device Manager" screen.



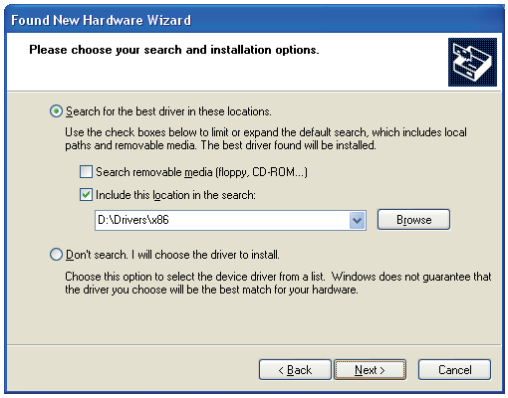
↓

3. **Open the Windows® Device Manager screen. Right-click on "Network Controller" and select "Update Driver Software**


Found New Hardware Wizard
Welcome to the Found New Hardware Wizard
This wizard helps you install software for:
Network Controller
If your hardware came with an installation CD or floppy disk, insert it now.
What do you want the wizard to do?
Install the software automatically (Recommended)
Install from a list or specific location (Advanced)
Click Next to continue.
< Back
Next >
Cancel

↓

4. **Click "Install from a list or specific location (Advanced)".**


Found New Hardware Wizard
Please choose your search and installation options.
Search for the best driver in these locations.
Use the check boxes below to limit or expand the default search, which includes local paths and removable media. The best driver found will be installed.
Search removable media (floppy, CD-ROM...)
Include this location in the search:
D:\Drivers\x86
Browse
Don't search. I will choose the driver to install.
Choose this option to select the device driver from a list. Windows does not guarantee that the driver you choose will be the best match for your hardware.
< Back
Next >
Cancel

5. **Insert the CD-ROM of the software package to the CD-ROM drive.**

6. **Select "Search for the best driver in these locations".**

<For 32-bit version operating system*1>
Check "Include this location in the search" and specify "\Drivers\x86" of the CD-ROM drive to be used.
(Example: "D:\Drivers\x86")

<For 64-bit version operating system*1>
Check "Include this location in the search" and specify "\Drivers\x64" of the CD-ROM drive to be used.
(Example: "D:\Drivers\x64")

*1: The operating system can be checked by Windows system information. For details, refer to the Microsoft® Knowledge Base.
http://support.microsoft.com/kb/827218/ (As of August 2013)

↓

(End)

If the troubleshooting above does not help, refer to ☞ Page 198, Section 16.8

Point

If "Block - Never install unsigned driver software" is selected under [Control Panel] -[System] - [Hardware] - [Driver Signing], the driver may not be installed.
Select "Ignore - Install the software anyway and don't ask for my approval", or "Warn - Prompt me each time to choose an action", and install the driver.

16.3 Troubleshooting for Personal Computer and Utility

The following shows the troubleshooting for error for operation of a personal computer or utility.

- Personal computer does not start or shuts down. (☞ Page 175, Section 16.3.1)
- Utility does not startup. (☞ Page 176, Section 16.3.2)
- The screen or operation is abnormal. (☞ Page 176, Section 16.3.3)
- Corrective action displayed on the screen is not effective. (☞ Page 177, Section 16.3.4)
- Personal computer operates slowly. (☞ Page 178, Section 16.3.5)

16.3.1 Personal computer does not start or shuts down.

When the personal computer on which the board is installed is not started, or the system shut down or system reset is occurred, check the items following the procedure shown below.

Point

Do not delete or disable the driver on the Device Manager screen when the board is normally recognized. If it is deleted or disabled, the operating system may shut down (blue screen).

1. **Uninstall the board and check if the personal computer is started.**
   - Checking personal computer and operating system (☞ Page 187, Section 16.7.5)
2. **After restarting the personal computer, check if there is any error.**
   - Checking on Event Viewer screen (☞ Page 189, Section 16.7.7)
3. **Install the board and restart the personal computer.**
   - Checking the board installation status (☞ Page 186, Section 16.7.2)
   - Checking on Device Manager screen (☞ Page 188, Section 16.7.6)

If any of the above troubleshooting do not solve the error, refer to ☞ Page 198, Section 16.8.
For the troubleshooting for the specific symptoms, refer to (1) in this section.

16.3.2 Utility does not startup

When the utility does not startup, check the following items.

Item	Corrective action
Is an error message displayed?	• Take corrective action following the message. (When the measurement displayed on the screen is not effective, ☞ Page 177, Section 16.3.4)
Is the icon of the utility displayed in the menu of the operating system? Does the utility start by clicking the icon?	• The installation is not completed normally. Install the software package. (☞ Page 169, Section 16.2.1)

If any of the above troubleshooting do not solve the error, refer to ☞ Page 198, Section 16.8.

16.3.3 The screen or operation is abnormal

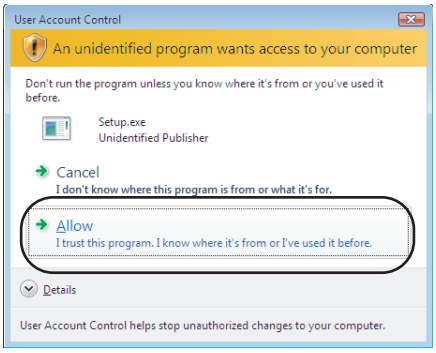
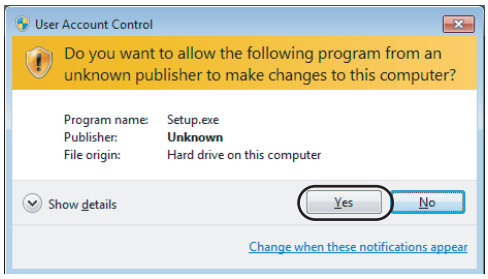
When the screen is not displayed normally or the software cannot be operated normally, check the following items.

Item	Corrective action
Is an error message displayed?	• Take corrective action following the message. (When the measurement displayed on the screen is not effective, ☞ Page 177, Section 16.3.4)
Is the display setting correct?	• Check if the display setting is correct with Device Manager, and install the appropriate display driver. • Perform Windows® Update • Change the hardware acceleration setting in the display setting.
Are other applications being executed?	• Close the screens of all other applications.
Is there any error on the personal computer?	• Check the operating environment. (☞ Page 187, Section 16.7.4) • Check the personal computer and operating system. (☞ Page 187, Section 16.7.5)

If any of the above troubleshooting do not solve the error, refer to ☞ Page 198, Section 16.8.

16.3.4 Corrective action displayed on the screen is not effective

When an unexpected screen is displayed or the corrective action displayed on the screen is not effective, check the following items.
The following table shows the corrective actions when the screen is displayed.

Item	Corrective action
User Account Control screen.  	This screen is displayed when user account control is enabled. Click "Allow" or the Yes button. For the method for disabling the screen, refer to ☞ Page 261, Appendix 11
User Account Control screen in which the password is required to be entered.	• This screen is displayed when the log on user does not have administrator authority. Log on as a user with administrator authority.
System stand-by screen. System hibernate screen.	The power save mode (stand by, hibernate) is not supported for CC-Link IE Field Network board. • Configure the settings of the "Power Options" in the control panel to avoid the computer from activating the power save mode Åistand by, hibernate). • Check the setting for when the computer's power button is pressed, and the settings of the uninterruptible power supply system (UPS).

For the error code, refer to the following section.
☞ Page 199, Section 16.9
For the screen displayed at installation, refer to the following section.
☞ Page 170, Section 16.2.3

For the screens of the operating system, contact the operating system manufacturer.
For the screens on which the user program is displayed, check the user program.
If any of the above actions do not solve the error, refer to ☞ Page 198, Section 16.8.

16.3.5 Personal computer operates slowly

The following explains the troubleshooting when the following symptoms occurred and operating speed of the personal computer became slow.

- Response of mouse or keyboard is slow.
- Operating speed of another application is slow.
- CPU utilization of personal computer is high.
- Operation of sound function is unstable.

When the operating speed of the personal computer becomes slow, check the following items.

Item	Corrective action
Is the CPU utilization of other application high?	• Start the Windows® task manager, and specify the application with high CPU utilization in the <<Processes>> or <<Performance>> tab. • Reduce the execution frequency of the application with high CPU utilization.
Is the cyclic transmission operation time longer?	• Adjust the value of link refresh cycle setting. (☞ Page 119, Section 10.2.5) • Set the constant link scan. (☞ Page 114, Section 10.2.2 (1))
Is the transient transmission operation time longer?	• Adjust the number of transient transmissions. • Reconsider "Event Condition" of the event function. (☞ Page 117, Section 10.2.4)

Replace the personal computer if its processing capability is lower for the desired processing.

16.4 Troubleshooting for Board and Driver

The following shows the troubleshooting for error for the functions.

- Hardware error or board WDT error (☞ Page 178, Section 16.4.1)
- Driver WDT error (☞ Page 179, Section 16.4.2)
- Driver does not start (☞ Page 179, Section 16.4.3)
- Bus error (☞ Page 179, Section 16.4.4)

16.4.1 Hardware error or board WDT error

When the hardware error or board WDT error occurred, check the following items.

Item	Corrective action
Is the board installed properly?	• Check the board installation status. (☞ Page 186, Section 16.7.2)
Does the board operate on other personal computer?	• After formatting the HD, install the operating system again. • Repair or replace the personal computer.

If any of the above actions do not solve the error, refer to ☞ Page 198, Section 16.8

16.4.2 Driver WDT error

When the driver WDT error occurred, check the following items.

Item	Corrective action
Has the error occurred due to the system overload temporarily?*1	• Reset the board. (☞ Page 127, Section 11.4) • Restart the personal computer.
Is the same error occurred repeatedly? (Is the system overloaded constantly?)	• Remove the factor of system overload. • Disable the driver WDT function or increase the driver WDT monitoring time. (☞ Page 119, Section 10.2.5)

*1 : A driver WDT error may occur when the system is overloaded temporarily due to the following factors.

- Windows® start processing at the personal computer startup.
- Operation of a device driver such as a graphic board.
- Operation of other software applications.

If any of the above actions do not solve the error, refer to ☞ Page 198, Section 16.8

16.4.3 Driver does not start

When the driver does not start normally, check the following items.

Item	Corrective action
Is the board installed properly?	• Check the board installation status. (☞ Page 186, Section 16.7.2)
Is the channel number set properly?	• Check the channel number. (☞ Page 191, Section 16.7.8)
Is the software package installed?	• Reinstall the software package. (☞ Page 169, Section 16.2.1)

If any of the above actions do not solve the error, refer to ☞ Page 198, Section 16.8

16.4.4 Bus error

When the bus error occurred, check the following items.

Item	Corrective action
Is the board installed properly?	Check the board installation status.(☞ Page 186, Section 16.7.2)
Does the board operate on other personal computer?	After formatting the HD, install the operating system again. Repair or replace the personal computer.

If any of the above actions do not solve the error, refer to ☞ Page 198, Section 16.8

16.5 Troubleshooting for Data Link

The following shows the troubleshooting for error for the data link on the network.

- Communication error (ERR. LED is ON/Flashing) (☞ Page 180, Section 16.5.1)
- User program cannot be accessed to CPU module other than QCPU (☞ Page 181, Section 16.5.2)
- Communication cannot be performed occasionally when executing user program (☞ Page 181, Section 16.5.3)
- Station is disconnected (☞ Page 181, Section 16.5.4)

16.5.1 Communication error (ERR. LED is ON/Flashing)

When the ERR.LED is ON/flashing due to the communication error, check the following items.

(1) ERR.LED is ON

One of the following error occurred.

- An all station error is detected
- Stations with same station number exist on the network
- The network parameter is corrupted
- The network parameter does not match the installation status (Reserved station specification, number of connected stations, network number etc.)

Check the following items.

Item	Corrective action
Is the network parameter set according to the actual board installation status?	Check the parameter settings. (☞ Page 110, Section 10.2)
Is the board error occurred?	• Perform the board test. (☞ Page 191, Section 16.7.9)
Does the hardware of the board operate properly?	• Perform the board standalone test. (☞ Page 191, Section 16.7.10 (1))

If any of the above actions do not solve the error, refer to ☞ Page 198, Section 16.8

(2) ERR.LED is flashing

The error station is detected. Check the following items.

Item	Corrective action
Is a disconnected station displayed in the network configuration (☞ Page 145, Section 13.2.2) of the CC-Link IE Field Network diagnostics?	Perform a troubleshooting on the disconnected station for when D LINK LED is OFF or flashing. (☞ Page 194, Section 16.7.11 (2))
"Total stations" set for network parameter of the master station is different from the number of slave stations connected to the network.	Correct "Total stations" to match with the number of slave stations.

If any of the above actions do not solve the error, refer to ☞ Page 198, Section 16.8

16.5.2 User program cannot be accessed to CPU module other than QCPU

The 64-bit version user program cannot be accessed to CPU module other than QCPU (Q mode).
Use 32-bit version user program.

16.5.3 Communication cannot be performed occasionally when executing user program

When the communication cannot be performed occasionally when executing a user program, check the following items.

Item	Corrective action
Ist he error code returned to the user program?	Check the returned value of the communication function. (☞ Page 199, Section 16.9)
Can the network error be monitored with utility?	Check the network status with the utility. (☞ Page 196, Section 16.7.12)
Does the same error occur when adding the station to the system?	Check if the same error occurs when adding the station in order next to the existing station for the system configuration which is configured only by a master station and own station. If the same error occurred, check the added station. • Checking installation environment ☞ Page 186, Section 16.7.1 • Checking cables and wiring ☞ Page 186, Section 16.7.3 • Board test ☞ Page 191, Section 16.7.10 (1)

If any of the above actions do not solve the error, refer to ☞ Page 198, Section 16.8

16.5.4 Station is disconnected

The following explains the troubleshooting when the following symptoms occurred and the station is disconnected.

- A station which has been communicating normally is suddenly disconnected
- Data cannot be read to/write from the accessed station
- Communication with accessed station occasionally fails
- A relevant station repeats network connection and disconnection

When the station is disconnected, check the following items.

Item	Corrective action
Is there any ambient temperature or noise influence?	Check the installation environment. (☞ Page 186, Section 16.7.1)
Is there an error on the cable or hub? Is the wiring properly?	Check the cable and wire. (☞ Page 186, Section 16.7.3)

If any of the above actions do not solve the error, refer to ☞ Page 198, Section 16.8

16.5.5 Communication is unstable

When the link scan time and transmission delay time is abnormally longer or a timeout occurs during transient transmission, check the following items.

Item	Corrective action
Is there any ambient temperature or noise influence?	Check the installation environment. (☞ Page 186, Section 16.7.1)
Is the D LINK LED of the master or slave station ON?	Check the LED and take corrective action in the case of L ERR. LED turned ON. (☞ Page 195, Section 16.7.11 (3))
Does the error occur on the "Selected Station Communication Status Monitor" screen in CC-Link IE Field Network diagnostics?	When an error occurred on PORT1 and PORT2 , perform cable and self-loopback tests. (☞ Page 53, Section 4.5.4, Page 60, Section 4.7.2)

If any of the above actions do not solve the error, refer to ☞ Page 198, Section 16.8

16.6 Troubleshooting for Device Access

The following shows the troubleshooting when an error occurred in the network data link.

- Cyclic transmission cannot be performed (☞ Page 183, Section 16.6.1)
- Transient transmission cannot be performed (☞ Page 184, Section 16.6.2)

16.6.1 Cyclic transmission cannot be performed

The following explains the troubleshooting when the following symptoms occurred and the cyclic transmission cannot be performed.

- The output of the own station does not reach the accessed station.
- The change of the input from the accessed station does not reach the own station.
- An unexpected value is set to the link device.

When cyclic data are not delivered to the master or a slave station, check the following items.

Item	Corrective action
Is the D LINK LED of the master or slave station ON?	If the D LINK LED is flashing or OFF, perform the troubleshooting. (☞ Page 194, Section 16.7.11 (2))
In "Network Configuration Setting" of the master station, is a slave station specified as a reserved station?	Cancel the reserved station setting of the slave station. (☞ Page 169, Section 16.2.2)
In "Network Configuration Setting" of the master station, is "RX/RY Setting" or "RWw/RWr Setting" for slave stations configured?	Set RX/RY or RWw/RWr data for each slave station within the allowable range. (☞ Page 169, Section 16.2.2)
Do the station numbers set in "Network Configuration Setting" of the master station match those set for corresponding slave stations?	Correct the station number(s).
Do the station types set in "Network Configuration Setting" of the master station match those set for the connected slave stations?	Correct the station types set in "Network Configuration Setting" of the master station.
Is the station number of CC-Link IE Field Network board duplicated with the station number of other station?	Change the duplicated station number.
Is the board hardware operating normally?	Perform the board test. (☞ Page 191, Section 16.7.10 (1))

If any of the above actions do not solve the error, refer to ☞ Page 198, Section 16.8
For the troubleshooting for the specific symptoms, refer to (1) in this section.

(1) An unexpected value is set to the specific link device

Check the following items.

Item	Corrective action
Is there a link error station?	Check the network condition by CC-Link IE Field Network diagnostics. (☞ Page 196, Section 16.7.12)
Is the parameter assignment range correct?	Check the "Network Configuration Setting" of the master station. (☞ Page 112, Section 10.2.2)
Is the link device accessed using a user program?	Check the argument of the communication function accessing to the link device.
Is the link device accessed from a sequencer in the network?	Check the device range used in the sequence program.

16.6.2 Transient transmission cannot be performed

The following explains the troubleshooting when the following symptoms occurred and the transient transmission cannot be performed.

Example)

- Data cannot be written to the accessed station
- Data from the accessed station cannot be read
- Monitoring cannot be performed with the utility
- Data cannot be read/written when accessing to device using a communication function of the user program

When transient transmissions cannot be executed to the target station, check the following items.

Item	Corrective action
Is the D LINK LED of the master or slave station ON or flashing?	If the D LINK LED is OFF, perform the troubleshooting. (☞ Page 194, Section 16.7.11 (2))
Is the baton passing status of the target station normal?	In the CC-Link IE Field Network diagnostics, identify the cause of the error and perform the corrective action. (☞ Page 144, Section 13.2)
Is the station number of CC-Link IE Field Network board duplicated with the station number of other station?	Change the duplicated station number.
Is the Communication test (☞ Page 61, Section 4.7.3) result normal?	In the CC-Link IE Field Network diagnostics, identify the cause of the error and perform the corrective action. (☞ Page 144, Section 13.2)
Is the MD function argument correct? Is the target station's network number correct? Is the target station number correct?	Check the MD function argument.
Is the board hardware operating normally?	Perform the board test. (☞ Page 191, Section 16.7.10 (1))

If any of the above actions do not solve the error, refer to ☞ Page 198, Section 16.8

16.7 Checking method

The following show the checking methods of the board.

(1) Checking with eyesight

Check the appearance of the device and connection status.

(a) Checking the installation and wiring

Check if the installation and wiring are performed within the range of the specification.

- Checking installation environment ☞ Page 186, Section 16.7.1
- Check the board installation ☞ Page 186, Section 16.7.2
- Checking cables and wiring ☞ Page 186, Section 16.7.3

(b) Checking the board appearance

The board status and network status can be checked by MODE LED or switch setting.

- Checking LED status ☞ Page 192, Section 16.7.11
- Checking channel numbers ☞ Page 191, Section 16.7.8

(2) Checking the error

check the screen displayed on a personal computer.

(a) Checking with the operating system

The driver operation status can be checked with Device Manager or event viewer.

- Checking personal computer and operating system ☞ Page 187, Section 16.7.5
- Checking on Device Manager screen ☞ Page 188, Section 16.7.6
- Checking operations with event viewer ☞ Page 189, Section 16.7.7

(b) Checking with the utility

The board status and network status can be checked with the utility.

- Checking channel numbers ☞ Page 191, Section 16.7.8
- Checking operations with board diagnostics ☞ Page 191, Section 16.7.9
- Checking operations with tests ☞ Page 191, Section 16.7.10
- Checking LED status ☞ Page 192, Section 16.7.11
- Checking network status with CC-Link IE Field Network diagnostics ☞ Page 196, Section 16.7.12
- Checking network status with monitoring link special relays (SB) and link special registers (SW) ☞ Page 197, Section 16.7.13
- Checking communication status with monitoring access target device ☞ Page 197, Section 16.7.14

16.7.1 Checking installation environment

Check if the installation environment is within the general specification (☞ Page 38, Section 3.1) or clear from noise.

Check	Corrective action
Is the ambient temperature within the specified range?	Keep the ambient temperature within the specified range by taking action such as removing heat source.
Is there any noise affecting the system?	Check the wire and cable lengths and grounding condition of each device, and take measures against noise. (☞ Page 43, CHAPTER 4)

16.7.2 Check the board installation

Check the board for an abnormal installation.

Check	Corrective action
Is the board properly installed?	• Remove the board and reinstall it. • Change the board installation position. • Fix the board firmly with screws.
Is the applicable number of boards installed?	• Remove the board which exceeds the maximum number of applicable boards.

16.7.3 Checking cables and wiring

Check if there is an error on the cable or hub, disconnected connectors, or improper wiring.

Check	Corrective action
Is the 1000BASE-T-compliant Ethernet cable used?	Replace the cable with the 1000BASE-T-compliant Ethernet cable. (☞ Page 33, Section 2.4.1)
Is the station-to-station distance 100m or less?	Change the station-to-station distance to 100m or less.
Does the cabling condition (bend radius) meet the specification?	Refer to the manual for the Ethernet cable, and correct the bend radius.
Is any Ethernet cable disconnected?	Replace the Ethernet cable.
Is the switching hub normal?	• Check if the 1000BASE-T-compliant switching hub is used. (☞ Page 33, Section 2.4.2) • Power off and then on the switching hub. • Replace the switching hub.

16.7.4 Checking operation environment

Check if the supported operating system and functions are used.

Check	Corrective action
Is the operating system written in "Operating Environment" (☞ Page 34, Section 2.5) Used?	• Use a personal computer on which the supported operating system is installed.
Is a programming language written in Operating Environment (☞ Page 34, Section 2.5) used for a user program using MELSEC data link library?	• Create a user program using a supported programming language. • For precautions when using MELSEC data link library, refer to the following manual. 📖MELSEC Data Link Library Reference Manual
Are the functions written in "The functions cannot be used" (☞ Page 34, Section 2.5) in "Operating Environment" set?	• Change the settings for the unsupported functions.
Is the personal computer logging on as a user with administrator authority	• Log on as a user with administrator authority?

16.7.5 Checking personal computer and operating system

Check if the personal computer or operating system has any problem.

Check	Corrective action
Is the power supply ensured?	• Check the power outlet and power cable of the personal computer.
Does the board operate normally if uninstall the other optional boards?	• Change the installation location of the board. • Check the resource acquisition status of other board and change the resource on the BIOS setting screen or "Device Manager" screen. • Reinstall the driver of the other optional boards. • Replace the other optional boards.
Does the board operate normally on another personal computer?	• Reinstall the operating system after formatting HD. • Repair or replace the personal computer.

For the problem of the personal computer or operating system, consult the personal computer or operating system manufacturer.

16.7.6 Checking on Device Manager screen

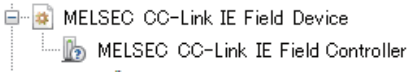
Check if the board is displayed on the Windows® "Device Manager" screen.

Check	Corrective action
Is the driver name of the board not displayed on the "Device Manager" screen?	The board or driver is not installed. • If the board is not installed, install the board. If the board is already installed, check the board installation status and reinstall the board. • Reinstall the software package. (☞ Page 169, Section 16.2.1) • If the board operates normally on other personal computer, the personal computer may have any problems. In this case, repair or replace the personal computer. • If the board does not operate normally on other personal computer, replace the board.
Is "!" displayed next to the icon on the "Device Manager" screen?	The board installation failed. • Reinstall the software package. (☞ Page 169, Section 16.2.1) • Check the board installation status and reinstall the board. • If the board operates normally on other personal computer, the personal computer may have any problems. In this case, repair or replace the personal computer. • If the board does not operate normally on other personal computer, replace the board.

If any of the above actions do not solve the error, refer to ☞ Page 198, Section 16.8

Remark

"?" is displayed next to the icon, however, the CC-Link IE Field Network board is recognized normally.



Point

Do not uninstall or disable the driver of the board on the Device Manager when the board is normally recognized. If it is uninstalled or disabled, the operating system may shut down (blue screen).

16.7.7 Checking operations with event viewer

Check the operations of the board with the Windows® event viewer.

(1) For error events

Errors occurred in the driver are displayed in the system log of the event viewer.
Errors related to the CC-Link IE Field Network board are displayed as "Mccief" in the source field of the event viewer.

The following explains error messages and their corrective actions.

Point

For multiple errors, check the occurrence order (occurrence time) on the event viewer screen and perform corrective actions from the first error that occurred.

Event ID	Error message	Corrective action
256 (0100H)	Because the error had occurred in the during starting of the device, the device was not able to be executed.	• Reinstall the software package. • Check the board installation condition. (☞ Page 186, Section 16.7.2) • If the board operates normally on another personal computer, the personal computer failure is speculated. Repair or change the personal computer. • If the error occurs on another personal computer, replace the board. • If any of the above actions do not solve the error, reinstall the operating system.
258 (0102H)	Time-out was detected while accessing the board.	• Restart the personal computer. • Check the board installation condition. (☞ Page 186, Section 16.7.2) • If the board operates normally on another personal computer, the personal computer failure is speculated. Repair or change the personal computer. • If the error occurs on another personal computer, replace the board. • If any of the above actions do not solve the error, consult your local service center or representative.
259 (0103H)	The board more than the maximum number of sheets which was able to be installed was detected.	Remove the board which exceeds the maximum number of applicable boards.
279 (0117H)	An error occurred when Registry Database wrote out.	• Restart the personal computer after installing the software package, and check if the error does not occur. • Increase the system memory and disk capacity.
280 (0118H)	Own station received the request which was not processable from another station.	Check the board which is commanding a process and check the program in the programmable controller CPU.
286 (011EH)	Failed to allocate the Memory Area.	Expand the memory in the personal computer.
287 (011FH)	The parameter is not set to the board. Otherwise, the parameter set to the board is broken.	Set parameters in the utility and reset the board.
288 (0120H)	Driver WDT error had occurred.	Refer to the corrective action when the driver WDT error occurred. (☞ Page 179, Section 16.4.2)
295 (0127H)	The Board WDT error had occurred.	Refer to the troubleshooting when the board WDT error occurred. (☞ Page 178, Section 16.4.1)

Event ID	Error message	Corrective action
296 (0128H)	Board error was detected by the hardware self-diagnosis.	• Restart the personal computer. • Refer to the troubleshooting when the Hardware error occurred. (☞ Page 178, Section 16.4.1)
304 (0130H)		
305 (0131H)	Entering sleep mode or hibernation mode, or fast startup is detected. The board is not operated normally because the sleep mode, hibernation mode, and fast startup is not supported by the board.	Change the power option not to entering the sleep mode, hibernation mode, or enabling fast startup and restart the personal computer.
539 (021BH)	Board error was detected by the hardware self-diagnosis.	• Restart the personal computer. • Refer to the troubleshooting when the Hardware error occurred. (☞ Page 178, Section 16.4.1)
540 (021CH)		
541 (021DH)		
542 (021EH)		
543 (021FH)		

(2) For information events

The following information event logs other than errors are displayed in the system log of the event viewer. The corrective actions are not required for the following events.

Event ID	Description	Output timing
1024 (0400H)	Driver started normally.	At driver startup
1025 (0401H)	Board reset was executed.	At board reset (Except for board reset at driver startup)
1026 (0402H)	Network parameter was updated.	At common parameter transmission by master station
1027 (0403H)	State information was updated.	At driver operation log update

16.7.8 Checking channel numbers

Check if the channel numbers are properly assigned to the boards on the "Channel No. Setting" screen. (☞ Page 124, Section 11.1)

Check	Corrective action
Are all installed boards displayed?	• Check the Device Manager screen. (☞ Page 188, Section 16.7.6) • Check the Event Viewer screen. (☞ Page 189, Section 16.7.7)
Are channel numbers duplicated?	• Set channel numbers not to duplicate.

16.7.9 Checking operations with board diagnostics

Check the contents displayed in the board list on the "Board Diagnostics" screen. (☞ Page 142, Section 13.1)

Check	Corrective action
Are all installed boards displayed?	• Check the channel numbers. (☞ Page 191, Section 16.7.8)
Is a board error occurring?	• Check the error code and perform the corrective action described in the error code list (☞ Page 199, Section 16.9).

16.7.10 Checking operations with tests

(1) Board test

Check for hardware errors by performing board tests on the "Board Diagnostics" screen (☞ Page 142, Section 13.1).

Item	Description	Reference
Bus I/F test	Check the hardware related to the bus I/F function of the CC-Link IE Field Network board.	Page 51, Section 4.5.1
Memory test	Check the memory of the CC-Link IE Field Network board.	Page 52, Section 4.5.2
Hardware test	Check the hardware in the CC-Link IE Field Network board.	Page 52, Section 4.5.3
Self-loopback test	Check the send/receive circuit of the transmission system of the CC-Link IE Field Network board.	Page 53, Section 4.5.4

For module test other than boards, refer to the manuals of each module.

(2) Network tests

Perform tests on the "Board Diagnostics" screen (☞ Page 142, Section 13.1) or the "CC IE Field Diagnostics" screen (☞ Page 144, Section 13.2) to check for errors in the connection status or settings of the network.

Item	Description	Reference
Loop test	Check the network circuit status and parameter setting status of each station.	Page 58, Section 4.7.1
Cable test	Check the connection status of the Ethernet cable.	Page 60, Section 4.7.2
Communication test	Check whether the communication path for transient transmission from the own station to the target station is correct.	Page 61, Section 4.7.3

16.7.11 Checking LED status

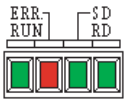
The LED status can also be checked by the LED display on the "CC IE Field Diagnostics" screen (☞ Page 153, Section 13.2.2 (7)), other than checking the board visually.

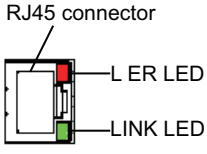
Point

When using the software package version 1.04E or later, the LED status of MODE, L ERR cannot be confirmed on the "CC IE Field diagnostics" screen. Confirm the LED status with the value stored in the following link special relays (SB) and link special registers (SW).

LED	Status	SB/SW
MODE	ON	The value of SW0043 is '0' or '1'.
	Flash	The value of SW0043 is '2'
	OFF	The value of SW0043 is '6', '7', or '9'.
D LINK	ON	SB0049 is OFF
	Flash	SB0049 is ON and SD0047 is OFF
	OFF	SB0049 is ON and SD0047 is ON
L ERR	ON	SB006C is ON or SB006D is ON
	OFF	SB006C is OFF and SB006D is OFF

Check the LED status and take the corresponding corrective actions.

LED	Status				Description	Reference
	RUN	ERR.	SD	RD		
	ON	OFF	OFF	OFF	Operating normally. (Data send/receive is not performed.)	Corrective action unnecessary
	ON	OFF	ON	—	Operating normally. (Sending data)	
	ON	OFF	—	ON	Operating normally. (Sending data)	
	ON	ON/ Flash	—	—	Communication error has occurred.	Page 180, Section 16.5.1
	OFF	OFF	OFF	OFF	A hardware failure or a board WDT error has occurred.	Page 178, Section 16.4.1
					Driver is not started.	Page 179, Section 16.4.3
	Flash	—	—	ON	Driver WDT error has occurred.	Page 179, Section 16.4.2
	Flash	ON	—	—	PCI bus/PCI Express bus error has occurred.	Page 179, Section 16.4.4

LED	Status		Description	Reference
P1,P2 	L ER	OFF	Operating normally. • The module received normal data. • The board does not perform loopback. • Linkup in progress.	Corrective action unnecessary
	LINK	ON		
	L ER	ON	• The module received abnormal data. • The board is performing loopback.	Page 195, (3) in this section
	LINK	OFF	Linkdown in progress	Page 195, (4) in this section

If the LED does not turn ON synchronized with the utility display or execution status of the board, the LED failure may occurred. In this case, replace the board.

(1) MODE LED is turned OFF or flashing

MODE LED is an LED which does not exist on the board. Check the status with the LED display on the "CC IE Field Diagnostics" screen (☞ Page 153, Section 13.2.2 (7)).

When the MODE LED is turned OFF, it is in the offline mode.

When the MODE LED is flashing, it is in the test mode.

Check	Corrective action
Is the mode set to the online mode?	Change the mode to the online mode. (☞ Page 110, Section 10.2)
Is the hardware of the board operating normally?	Perform the board test. (☞ Page 191, Section 16.7.10 (1))

(2) D LINK LED is turned OFF or flashing

D LINK LED is an LED which does not exist on the board. Check the status with the LED display on the "CC IE Field Diagnostics" screen. (☞ Page 153, Section 13.2.2 (7))

When the D LINK LED is turned OFF, both cyclic transmission and transient transmission of the board are stopped.

When the D LINK LED is flashing, the cyclic transmission of the board is stopped, or communication route is consecutively built because the network communication route is unstable.

Check	Corrective action
Is the master station connected to the network and operating normally?	• If an error occurred on the master station, solve the error. • Check if the master station is performing data link with CC-Link IE Field Network diagnostics, and perform the corrective action. (☞ Page 144, Section 13.2)
Is the connected other station normal?	Check if the other station's power is turned ON.
Are cables and wiring normal?	• Check the cables and wiring. (☞ Page 186, Section 16.7.3) • Perform a loop test. (☞ Page 58, Section 4.7.1) • Perform a cable test. (☞ Page 60, Section 4.7.2)
Is the loopback function set to be used on the master station?	Configure a ring topology without connecting the switching hub.
Check for any of the following wiring conditions. • Connecting both PORT1 and PORT2 to the switching hub • Although the loopback function is disabled, the network is configured in ring topology. • Although the loopback function is enabled, the network is configured in star topology. • The network is incorrectly configured in ring topology.	• Correct the wiring. (☞ Page 26, Section 2.2) • The system does not contain a switching hub. • When not using the loopback function Disconnect an Ethernet cable connected to any stations on the network (either PORT1 or PORT2). The network topology will become a line topology and data link will start. • When using the loopback function Enable the loopback function and rewrite the network parameter. (☞ Page 85, Section 5.8) • The system contains a switching hub. 1. Check if the loopback function setting is correctly configured. (☞ Page 85, Section 5.8) If incorrect, correct the network parameter and rewrite it. When data link starts over the network, the action is successful. 2. Disconnect one Ethernet cable connected to the switching hub and power off and then on the hub. (Repeat this operation until data link starts over the network.) 3. When data link starts over the network, check the network configuration by CC-Link IE Field Network diagnostics. (☞ Page 144, Section 13.2)
Isn't the station number duplicated with any of other stations?	Change the duplicated station number.
Is the board hardware operating normally?	Perform the board test. (☞ Page 191, Section 16.7.10 (1))

(3) L ERR. LED/L ER LED is turned ON

L ERR. LED is an LED which does not exist on the board. Check the status with the LED display on the "CC IE Field Diagnostics" screen. (☞ Page 153, Section 13.2.2 (7))

This indicates a occurrence of received data error or loop error. The L ER LED of the port which detected the error is turned ON.

The error detail can be checked with the CC-Link IE Field Network diagnostics. (☞ Page 145, Section 13.2.2)

L ERR. LED is turned OFF automatically when a normal data is received or the loopback function is not performed in a ring topology.

Check	Corrective action
Are cables and wiring normal?	• Check the cables and wiring. (☞ Page 186, Section 16.7.3) • Perform a cable test. (☞ Page 60, Section 4.7.2)
Is the connected other station normal?	Check if the other station's power is turned ON.
Is the mode of the master station set to the online mode?	Change the mode of the master station to the online mode. (☞ Page 110, Section 10.2)
Is the installation environment within the specifications? Is there any noise influence?	• Check the installation environment. (☞ Page 186, Section 16.7.1)
Is the loopback function enabled for the master station?	When the loopback function is enabled, check if the ring topology is correctly configured for the port where the L ERR. LED is on. (☞ Page 28, Section 2.2 (3)(b))
Is the board hardware operating normally?	Perform the board test. (☞ Page 191, Section 16.7.10 (1))

(4) LINK LED is turned OFF

This indicates a status in which the board can not communicate (link down).

Check	Corrective action
Are cables and wiring normal?	• Check the cables and wiring. (☞ Page 186, Section 16.7.3) • Perform a cable test. (☞ Page 60, Section 4.7.2)
Is the connected other station normal?	Check if the other station’s power is turned ON.
Is the board hardware operating normally?	Perform the board test. (☞ Page 191, Section 16.7.10 (1))

16.7.12 Checking network status with CC-Link IE Field Network diagnostics

Check the network condition on the "CC IE Field Diagnostics" screen (☞ Page 145, Section 13.2.2).

Check	Corrective action
Are all installed boards displayed on the "Select Diagnostics Destination? (☞ Page 144, Section 13.2.1)	• Check the channel numbers. (☞ Page 191, Section 16.7.8)
Is an error displayed on the network configuration diagram?	• Check the details of the communication error on the "Selected Station Communication Status Monitor" screen. (Perform the troubleshooting described on the "Error details" screen.) (☞ Page 153, Section 13.2.2 (7))
Are details of the error station selected on the network configuration diagram displayed on the "Selected Station Communication Status Monitor" screen?	• Click the button displayed when a error occurs on the "Selected Station Communication Status Monitor" screen and perform the troubleshooting described on the "Error details" screen. (☞ Page 153, Section 13.2.2 (7)) The following are the causes for when details of the error station are not displayed. • Master station duplication • Station number duplication • Slave station type error Check the "Board Diagnostics" screen and identify the cause of the error. (☞ Page 142, Section 13.1) If the error station is a module, identify the cause of the error with System Monitor of GX Works2.
• Is there any error log on the "Network Event History" screen? (☞ Page 159, Section 13.2.6)	• Check the detailed information and identify the cause of the error.

16.7.13 Checking network status with monitoring link special relays (SB) and link special registers (SW)

Check link special relays (SB) and link special registers with the Device Monitor Utility (☞ Page 130, Section 12.2).

Check	Corrective action
Is SB0047 (Baton pass status (own station)) faulty (ON)?	• Perform the troubleshooting for when the transient transmission cannot be performed at own station. (☞ Page 184, Section 16.6.2)
Is SW00A0 to SW00A7 (Baton pass status (each station)) faulty (ON)?	• Perform the troubleshooting for when the transient transmission cannot be performed at station in which baton pass error is occurring. (☞ Page 184, Section 16.6.2)
Is SB0049 (Data link status (own station)) faulty (ON)?	• Perform the troubleshooting for when the cyclic transmission cannot be performed at own station. (☞ Page 183, Section 16.6.1)
Is there a cyclic transmission error station in SW00B0 to SW00B7 (Data link status (each station))?	• Perform the troubleshooting for when the cyclic transmission cannot be performed at station in which data link error is occurring. (☞ Page 183, Section 16.6.1)
Is SB004A/SB004B (Own station's CPU status (1)/Own station's CPU status (2)) faulty (ON)?	• Check the Windows® event viewer. (☞ Page 189, Section 16.7.7)
Is there an error station in SW0100 to SW0107/ SW0110 to SW0117 (CPU (Stop error/ Continuation error))?	• Refer to the CPU module manual regarding the CPU of the station in which a CPU Stop error/Continuation error is occurring, perform the troubleshooting of the CPU module.

For link special relays (SB), refer to ☞ Page 224, Appendix 3, and for link special registers (SW), refer to ☞ Page 236, Appendix 4.

16.7.14 Checking communication status with monitoring access target device

Monitor the link device and access target device with Device Monitor Utility (Page 139 Section 12.2).
Check whether the system is performing as set on the parameters and programs by checking the performance of link device communication, or transient transmission/reception.

Check	Corrective action
An error message is displayed.	• Take corrective action following the message. • Check the error code and perform the corrective action described in the error code list (☞ Page 199, Section 16.9).
Is an unexpected value set to the link device?	• Take corrective action for when an unexpected value is set to the link device. (☞ Page 183, Section 16.6.1 (1))
Is the device able to be written with Device Monitor Utility?	• Check the user program when the access can be performed normally with Device Monitor Utility.

16.8 Information Required for Inquiries

When the troubleshooting cannot solve the problem, or a board failure occurs, please consult your local Mitsubishi service center or representative. Inform the following conditions and situations when inquiring the problems.

(1) Product information

Item		Condition/Situation	Reference
Product version	Board	Model: Q80BD-J71GF11-T2/Q81BD-J71GF11-T2 Rating plate :_____ _____-__ Product information :_____ _____-__	Page 260, Appendix 9
	Utility	Model: SW1DNC-CCIEF-( ) Version: __._____ __	Page 100, Section 8.3 (2)
Personal computer	Personal computer name	Manufacturer: Personal computer name:	Page 34, Section 2.5
	CPU	(Example: Intel® Core™2 Duo Processor 3GHz)	
	Memory size		
	Operating system	(Example: Windows® XP Professional)	
Other option boards	Existence	(If exist, type, the number of boards and so on)	-
	Situation checked with disconnecting other option boards		-

(2) Failure content

Item	Condition/Situation
Failure description	(Example: The LINK LED does not turn on even though the computer is turned on.)
Occurrence frequency	
Occurrence condition	If the failure occurs only in the specific case, inform the occurrence condition noticed.
Troubleshooting result	Inform the following descriptions. • The result of troubleshooting performed • The situation when checking with other boards or computers. (Example: Event ID 295 "The Board WDT error had occurred." error is displayed on the event viewer when the personal computer is started. It also occurs when mounting the problem board with another computer. Other boards mounted with the computer works properly.)

16.9 Error Code List

The following lists the error codes.

For error codes which are not listed in this section, refer to the following manual.

MELSEC Data Link Library Reference Manual

MELSEC-Q CC-Link IE Field Network Master/Local Module User's Manual

If the error still occurs after the corrective action, please consult your local Mitsubishi service center or representative.

For information required for inquiries, refer to Page 198, Section 16.8

Error code	Error	Corrective action
D000H to D00FH	Hardware error	• Refer to corrective action for hardware error. (Page 210, (1) in this section)
D010H to D013H	Parameter error	• Correct the points assigned to the link devices.
D014H to D016H	Hardware error	• Refer to corrective action for hardware error. (Page 210, (1) in this section)
D018H	Parameter error	• Correct the constant link scan time.
D019H to D020H	Hardware error	• Refer to corrective action for hardware error. (Page 210, (1) in this section)
D030H to D035H	Connection failure	• Correct the wiring condition.
D036H	Hardware error	• Refer to corrective action for hardware error. (Page 210, (1) in this section)
D037H	Connection failure	• Check the number of connected modules.
D040H	Hardware error	• Refer to corrective action for hardware error. (Page 210, (1) in this section)
D041H	Connection failure	• Check the number of connected modules.
D080H to D084H	Hardware error	• Refer to corrective action for hardware error. (Page 210, (1) in this section)
D0A0H	Transient data transmission response wait timeout	• If the own station or target station was disconnected from the network, identify the cause of the disconnection and take action. • When the mode of the master station is "Online (High Speed Mode)", change it to "Online (Normal Mode)" and retry the operation. • When the receiving station encountered overloading of transient data, reduce the frequency of transient transmission and then retry the operation.
D0A1H	Transient data transmission completion wait timeout	• Check if the cables and switching hub are connected properly. • Exchange the cables between PORT1 and PORT2 and retry the operation. • Reduce the frequency of transient transmission and then retry the operation. • Perform hardware and self-loopback tests. (Page 52, Section 4.5.3, Page 53, Section 4.5.4)
D0A2H	Transient data transmission processing wait timeout	• Reduce the frequency of transient transmission and then retry the operation. • Check if the cables and switching hub of the request source are connected properly.
D0A3H	Transient data transmission error	• If the own station or target station was disconnected from the network, identify the cause of the disconnection and take action. • Correct the target station number of the transient data, and retry the operation. • If the target station of the transient data resides in another network, check if the routing parameters for respective stations are correctly set, and take corrective action.
D0A4H to D0A6H	Transient transmission failed	• Check if the cables and switching hub are connected properly. • Exchange the cables between PORT1 and PORT2 and retry the operation. • Reduce the frequency of transient transmission and then retry the operation. • Perform hardware and self-loopback tests. (Page 52, Section 4.5.3, Page 53, Section 4.5.4)
D0A7H	Transient reception failed	

Error code	Error	Corrective action
D0C0H to D0D0H	Process error	• The error occurs in the following process. Wait for a while, and retry the operation. D0C0H: Reserved station specification D0C1H: Disabling the reserved station D0C2H: Data link stop instruction D0C3H: Data link start instruction D0C4H: Temporary error invalid station setting D0C5H: Cancellation of temporary error invalid station setting D0C6H: Change of other station number setting D0D0H: Other station number setting
D0E0H	Station type mismatch	• In "Network Configuration Setting" of the master station, change the station type to that of the own station.
D0E1H	Own station specified as reserved	• In "Network Configuration Setting" of the master station, cancel the reserved station setting. • Change the station number of the own station to a station number that is not reserved.
D0E2H	Station No. duplication (own station)	• Change the station number so that it will not be duplicated with any other station number. • After taking the above action, power off and then on all the stations that detected the station number duplication error, or reset them.
D0E3H	Own station No. out of range	• Add information of the own station to "Network Configuration Setting" of the master station.
D0E4H	Multiple master stations (including own station)	• Check the network condition by CC-Link IE Field Network diagnostics, and take action. • Check if the cables and switching hub are connected properly. • After taking the above action, power OFF and then ON all the stations that detected this error, or reset them.
D0F0H to D113H	Hardware error	• Refer to corrective action for hardware error. (☞ Page 210, (1) in this section)
D200H	Double transient data received	• Check the network condition by CC-Link IE Field Network diagnostics, and take action. • Check if the cables and switching hub are connected properly. • If the request source resides in another network, check if the routing parameters are correctly set, and take corrective action.
D201H	Header information error in transient data	• Correct the header information at the request source, and retry the operation.
D202H	Send buffer full	• Reduce the frequency of transient transmission and then retry the operation. • When the mode of the master station is "Online (High Speed Mode)", change it to "Online (Normal Mode)" and retry the operation. • Check if the cables and switching hub are connected properly.
D203H	Read/write address error in transient data	• Correct the read/write address at the request source, and retry the operation.
D204H	Network No. error in transient data	• Correct the network number at the request source, and retry the operation. • If the request source resides in another network, check if the routing parameters are correctly set, and take corrective action.
D205H	Target station No. error in transient data	• Correct the target station number at the request source, and retry the operation.
D206H	Network No. error in transient data	• Correct the network number at the request source, and retry the operation. • If the request source resides in another network, check if the routing parameters are correctly set, and take corrective action.
D207H	Incorrect number of relays specified in transient data	• Correct the system configuration to reduce the number of relay stations to seven or less. • Check if the routing parameters are correctly set, and take corrective action.
D208H	Network No. error in transient data	• Correct the network number at the request source, and retry the operation. • If the request source resides in another network, check if the routing parameters are correctly set, and take corrective action.

Error code	Error	Corrective action
D209H	Target station No. error in transient data	• Correct the target station number at the request source, and retry the operation.
D20AH		
D20BH	Specified master station No. error in transient data	
D20CH	Current master station No. error in transient data	
D20DH	Transient data transmission completion wait timeout	• Check the network condition by CC-Link IE Field Network diagnostics, and take action. • When the own station or target station detected an error, identify the cause of the error and take action. • Reduce the frequency of transient transmission and then retry the operation. • When the mode of the master station is "Online (High Speed Mode)", change it to "Online (Normal Mode)" and retry the operation. • Check if the cables and switching hub of the request source are connected properly.
D20EH	Header information error in transient data	• Correct the header information at the request source, and retry the operation.
D20FH	Target station No. error in transient data	• Check if the command can be requested to all or a group of stations at the request source, and retry the operation.
D210H	Target station No. error in transient data	• Correct the header information at the request source, and retry the operation.
D211H	Own station No. undefined (dedicated instruction)	• Set the station number in the parameter setting, and retry the operation.
D212H	Transient transmission failed	• Check if the cables and switching hub of the request source are connected properly. • Exchange the cables between PORT1 and PORT2 of the request source and retry the operation. • Reduce the frequency of transient transmission and then retry the operation.
D213H	Transient data request error	• Correct the request command at the request source, and retry the operation.
D214H	Transient data request error	• Correct the data length at the request source, and retry the operation.
D215H	Transient data request error	• Change the mode to Online, and retry the operation.
D216H to D217H	Transient data request error	• Correct the request command at the request source, and retry the operation.
D218H	Transient data request error	• At the request source, correct the number of the data to be read from or written to the device, and retry the operation.
D219H	Transient data request error	• Correct the attribute code at the request source, and retry the operation.
D21AH	Transient data request error	• Correct the access code at the request source, and retry the operation.
D21BH to D21CH	Transient data request error	• Abnormal transient data were issued from the CPU module. • Replace the CPU module and retry the operation. • If this error persists, please consult your local Mitsubishi service center or representative, explaining a detailed description of the problem.
D21DH	Network No. error in transient data	• A cable test cannot be applied to a network of a different network number. Correct the data in "Testing Station Setting", and retry the cable test. • Transient data that is not applicable to a different network were received. Correct the network number or target station number at the request source, and retry the operation.
D21EH	Target station No. error in transient data	• The communication test cannot be executed with the relay station(s) specified. Correct "Communication Destination Setting", and then execute the communication test again. • Transient data of the application type that is not executable for the own station were received. Correct the application type or target station number at the request source, and retry the operation.
D21FH	Target station type error (dedicated instruction)	• The SEND instruction is not applicable to head modules. • Modify the program so that the SEND instruction will not be used for head modules.

Error code	Error	Corrective action
D220H	No master station	• Add a master station to the network.
D222H	Transient data request error	• Correct the request command at the request source, and retry the operation.
D223H	Transient error	• Check the network condition by CC-Link IE Field Network diagnostics, and take action. • Check if the cables and switching hub are connected properly. • If the request source resides in another network, check if the routing parameters are correctly set, and take corrective action. • If this error persists, please consult your local Mitsubishi service center or representative, explaining a detailed description of the problem.
D22EH	Station No. setting not available for the target station	Although change of the target station number was attempted online from the master station, the target station does not have the online station number setting function. • Check the manual for the target station for availability of the station number setting function. • If the function is supported by the model, please consult your local Mitsubishi service center or representative, explaining a detailed description of the problem.
D22FH	No baton pass for the target station	• Check the communication status of the station whose station number will be changed.
D230H	Incorrect station No. specified	• Station number change was attempted for the own station (master station). • Check if no station number has been set for the target station of station number change.
D231H	Station No. already set for the target station	• For the target station of station number change, a station number has already been set. • Check if no station number has been set for the target station of station number change.
D232H	Station No. setting target not exist	• The target station of station number change does not exist. • Check if no station number has been set for the target station of station number change.
D240H to D243H	Target network module failure (dedicated instruction)	• Correct the following settings at the request source of the dedicated instruction, and retry the operation. D240H: Network number D241H: Target station number D242H: Command code D243H: Channel used (correct within the range) • If the request source resides in another network, check if the routing parameters are correctly set, and take corrective action.
D244H	Incorrect transient data	• Correct the transient data at the request source, and retry the operation. • If this error persists, please consult your local Mitsubishi service center or representative, explaining a detailed description of the problem.
D245H	Target station No. error (dedicated instruction)	• Correct the target station number at the request source of the dedicated instruction, and retry the operation. • If the request source resides in another network, check if the routing parameters are correctly set, and take corrective action.
D246H	Incorrect transient data	• Correct the transient data at the request source, and retry the operation. • If this error persists, please consult your local Mitsubishi service center or representative, explaining a detailed description of the problem.
D247H	Double dedicated instructions received	• Check the network condition by CC-Link IE Field Network diagnostics, and take action. • Check if the cables and switching hub of the request source are connected properly. • If the request source resides in another network, check if the routing parameters are correctly set, and take corrective action.
D248H	Incorrect transient data	• Correct the transient data at the request source, and retry the operation. • If this error persists, please consult your local Mitsubishi service center or representative, explaining a detailed description of the problem.

Error code	Error	Corrective action
D249H	Target station's CPU type error (dedicated instruction)	• Correct the target station's CPU type at the request source of the dedicated instruction, and retry the operation. • If the request source resides in another network, check if the routing parameters are correctly set, and take corrective action.
D24AH	Arrival monitoring time error (dedicated instruction)	• Correct the arrival monitoring time at the request source of the dedicated instruction, and retry the operation. • When the own station or target station has detected an error, identify the cause of the error and take action. • Reduce the frequency of transient transmission and then retry the operation. • When the mode of the master station is "Online (High Speed Mode)", change it to "Online (Normal Mode)" and retry the operation. • Check if the cables and switching hub of the request source are connected properly.
D24BH	Number of resends error (dedicated instruction)	• Correct the number of resends at the request source of the dedicated instruction, and retry the operation. • When the own station or target station has detected an error, identify the cause of the error and take action. • Reduce the frequency of transient transmission and then retry the operation. • When the mode of the master station is "Online (High Speed Mode)", change it to "Online (Normal Mode)" and retry the operation. • Check if the cables and switching hub of the request source are connected properly.
D24CH	Target network No. error (dedicated instruction)	• Correct the network number at the request source of the dedicated instruction, and retry the operation. • If the request source resides in another network, check if the routing parameters are correctly set, and take corrective action.
D24DH	Incorrect channel used for the dedicated instruction	• For the SEND instruction, set 1 or 2 for the target channel No. in the control data. • For the REMFR/REMTO instruction, set any of 1 to 32 for the channel No.
D24EH	Dedicated instruction error	• An invalid value is set for the control block of the dedicated instruction. Correct the value, and then retry the operation. • If this error persists, please consult your local Mitsubishi service center or representative, explaining a detailed description of the problem.
D24FH	Own station No. undefined (dedicated instruction)	• Set the station number in "Network Parameter", and retry the operation. • If this error persists, please consult your local Mitsubishi service center or representative, explaining a detailed description of the problem.
D250H	Flash ROM failure	• The flash ROM may be faulty. Refer to corrective action for hardware error. (☞ Page 210, (1) in this section)
D251H	Arrival confirmation error (dedicated instruction)	• Correct the number of resends at the request source of the dedicated instruction, and retry the operation. • When the own station or target station has detected an error, identify the cause of the error and take action. • Reduce the frequency of transient transmission and then retry the operation. • When the mode of the master station is "Online (High Speed Mode)", change it to "Online (Normal Mode)" and retry the operation. • Check if the cables and switching hub of the request source are connected properly.
D252H	Transmission completion wait timeout (dedicated instruction)	• Check the network condition by CC-Link IE Field Network diagnostics, and take action. • Reduce the frequency of transient transmission and then retry the operation. • When the mode of the master station is "Online (High Speed Mode)", change it to "Online (Normal Mode)" and retry the operation. • If this error persists, please consult your local Mitsubishi service center or representative, explaining a detailed description of the problem.

Error code	Error	Corrective action
D253H	Response timer timeout (dedicated instruction)	The dedicated instruction did not end within the transient timeout monitoring time. Send data from other station may be received, or the specified target station for executing the dedicated instruction may be failed. • When executing the RECV instruction, check if a message is sent from another station. • Check the network condition by CC-Link IE Field Network diagnostics, and take action. • If this error persists, please consult your local Mitsubishi service center or representative, explaining a detailed description of the problem.
D254H	Unsupported request received (dedicated instruction)	• Change the target station at the station that sent the SEND instruction. • If this error persists, please consult your local Mitsubishi service center or representative, explaining a detailed description of the problem.
D255H	Target station No. error (dedicated instruction)	• Check the target station number, and retry the operation. • If this error persists, please consult your local Mitsubishi service center or representative, explaining a detailed description of the problem.
D256H	Execution/abnormal end type error (dedicated instruction)	• Check the execution/abnormal end type, and retry the operation. • If this error persists, please consult your local Mitsubishi service center or representative, explaining a detailed description of the problem.
D257H	Request type error (REQ)	• Check the request type in the request data, and retry the operation. • If this error persists, please consult your local Mitsubishi service center or representative, explaining a detailed description of the problem.
D258H	Specified/current control station not exist (dedicated instruction)	• Check the target station number, and retry the operation. • If this error persists, please consult your local Mitsubishi service center or representative, explaining a detailed description of the problem.
D259H	Mode error during dedicated instruction execution	• Change the mode of the master station from "Loop test" to "Online", and execute it again. • If this error persists, please consult your local Mitsubishi service center or representative, explaining a detailed description of the problem.
D25AH	Channel in use (dedicated instruction)	• Retry it after a little while. • Change the channel for the own or target station.
D25BH	Channel in use (dedicated instruction)	• Change the channel for the own or target station.
D25CH	Dedicated instruction error	• An invalid value is set for the control block of the dedicated instruction. Correct the value, and then retry the operation. • If this error persists, please consult your local Mitsubishi service center or representative, explaining a detailed description of the problem.
D25DH	Incorrect transient data	• Check the transient data at the request source, and retry the operation. • If this error persists, please consult your local Mitsubishi service center or representative, explaining a detailed description of the problem.
D25EH	Dedicated instruction error	• Another CC-Link dedicated instruction is in execution. Retry it after a little while. • If this error persists, please consult your local Mitsubishi service center or representative, explaining a detailed description of the problem.
D25FH	Station type error (REMFR/ REMTO executing station)	• The REMFR/REMTO instruction is not available for stations other than master and local stations. Modify the program so that the REMFR/REMTO instruction will not be used.
D260H	Station type error (REMTO executing station)	• The REMTO instruction is not available for local stations. The REMTO instruction must be executed on the master station.
D261H	Station type error (CCPASET executing station)	• Parameter setting using the CCPASET instruction is not available for local stations. It must be executed to the master station.
D262H	Number of total slave stations setting error (CCPASET)	• Correct the number of total slave stations in the control data, and retry the operation. • If this error persists, please consult your local Mitsubishi service center or representative, explaining a detailed description of the problem.

Error code	Error	Corrective action
D263H	Constant link scan time setting error (CCPASET)	• Correct the constant link scan time in the control data, and retry the operation. • If this error persists, please consult your local Mitsubishi service center or representative, explaining a detailed description of the problem.
D264H	Station No. range error (CCPASET)	• Change the station number in the setting data to any of 1 to 120, and retry the operation. • If this error persists, please consult your local Mitsubishi service center or representative, explaining a detailed description of the problem.
D265H	Duplicate station No. (CCPASET)	• Correct the station number in the setting data, and retry the operation. • If this error persists, please consult your local Mitsubishi service center or representative, explaining a detailed description of the problem.
D266H	Number of total slave stations error (CCPASET)	• Correct the number of total slave stations in the setting data, and retry the operation. • If this error persists, please consult your local Mitsubishi service center or representative, explaining a detailed description of the problem.
D267H	Station type error (CCPASET)	• Change the station type value in the setting data to any of 0 to 3, and retry the operation. • If this error persists, please consult your local Mitsubishi service center or representative, explaining a detailed description of the problem.
D268H	Device range assignment error (CCPASET)	• Correct the link device offset or size of slave station(s) in the setting data, and retry the operation. • If this error persists, please consult your local Mitsubishi service center or representative, explaining a detailed description of the problem.
D269H	Target station type error	• Set the target station number in the REMFR/REMTO instruction to the station number of an intelligent device station.
D26AH	Target station No. error	• Reconnect the target station of the REMFR/REMTO instruction.
D26BH	Network No. error (CCPASET executing station)	• Set any of 1 to 239 to Switch 1 (network No.) in the intelligent function module switch setting of the master/local module.
D26CH	Station No. error (CCPASET executing station)	• When activating as a master station, set 0 to Switch 2 in the intelligent function module switch setting of the master/local module. • When activating as a local station by the CCPASET instruction, use a master/local module with a serial number whose first five digits are 12072 or higher. • When activating as a local station, set a value within the range from 3101H to 3178H to Switch 2 in the intelligent function module switch setting of the master/local module.
D26DH	Mode error (CCPASET executing station)	• Set 0 to Switch 3 in the intelligent function module switch setting of the master/local module
D280H	Transient data request error	• Correct the request command at the request source, and retry the operation.
D281H	Transient reception failed	• Check the network condition by CC-Link IE Field Network diagnostics, and take action. • When the receiving station encountered overloading of transient data, send the data from the source after a give time has elapsed.
D282H	Receive queue full	• Temporarily stop the transient transmission, and then retry the operation. • Reduce the frequency of transient transmission and then retry the operation. • Using the COM instruction, increase the processing frequency of transient transmission. • If this error persists, please consult your local Mitsubishi service center or representative, explaining a detailed description of the problem.
D283H	Transient transmission failed	• Check the network condition by CC-Link IE Field Network diagnostics, and take action. • Exchange the cables between PORT1 and PORT2 of the request source and retry the operation. • Reduce the frequency of transient transmission and then retry the operation.

Error code	Error	Corrective action
D2A0H	Receive buffer full	• Check the network condition by CC-Link IE Field Network diagnostics, and take action. • When the receiving station encountered overloading of transient data, send the data from the source after a give time has elapsed.
D2A1H	Send buffer full	• Reduce the frequency of transient transmission and then retry the operation. • Check if the cables and switching hub of the request source are connected properly.
D2A2H	Transmission completion wait timer timeout	• Reduce the frequency of transient transmission and then retry the operation. • When the mode of the master station is "Online (High Speed Mode)", change it to "Online (Normal Mode)" and retry the operation. • Check if the cables and switching hub of the request source are connected properly.
D2A3H to D2ADH	Error in transient data	• Adjust the following settings at the request source of transient, and retry the operation. D2A3H: Number of data (frame length) D2A4H: Header information D2A5H: Target station number D2A6H: Request source number D2A7H to D2A8H: Header information D2A9H: Target network number D2AAH: Target station number D2ABH: Network number of the request source D2ACH: Station number of the request source D2ADH: Number of data (frame length)
D2AEH	Target station No. error in transient data	• The own station received transient data that is addressed to another station on the route. Check and correct the network and target station numbers, and retry the operation. • Check if the routing parameters are correctly set, and take corrective action.
D2AFH	Target station No. error in transient data	• Transient data transmission addressed to the own station was requested. Check the network number and target station number, and retry the operation. • Check if the routing parameters are correctly set, and take corrective action.
D2B0H	Transient transmission failed	• Check if the cables and switching hub of the request source are connected properly. • Exchange the cables between PORT1 and PORT2 of the request source and retry the operation. • Reduce the frequency of transient transmission and then retry the operation.
D602H to D609H	Parameter error	• Write the network parameters to the board again. • If this error persists, please consult your local Mitsubishi service center or representative, explaining a detailed description of the problem.
D60AH	Parameter error (Link scan mode/constant link scan time setting error)	• Set the link scan mode to asynchronous, or cancel the constant link scan time setting.
D60DH to D610H	Hardware error	• Refer to corrective action for hardware error. (☞ Page 210, (1) in this section)
D611H to D618H	Parameter error (Device range assignment error)	• Correct the link device size of slave station(s), and retry the operation. D611H to D612H: RWw D613H to D614H: RWr D615H to D616H: RY D617H to D618H: RX
D619H to D61AH	Parameter error	• Write the network parameters to the board again. • If this error persists, please consult your local Mitsubishi service center or representative, explaining a detailed description of the problem.

Error code	Error	Corrective action
D61BH to D61EH	Parameter error (Overlapping of the device)	• Correct the link device offset or size of slave station(s), and retry the operation. D61BH: RWw D61CH: RWr D61DH: RY D61EH: RX
D61FH	CCPASET execution error	• Erase the network parameter settings, select "Write to PLC", and execute the CCPASET instruction again.
D620H	Incorrect transient data	• Check the transient data at the request source, and retry the operation. • If this error persists, please consult your local Mitsubishi service center or representative, explaining a detailed description of the problem.
D621H to D62CH	Parameter error	• Write the network parameters again. • Correct the network parameters, and retry the operation. D622H: Number of total slave stations error D624H: Constant link scan time setting error D625H: Block data assurance per station setting error D628H: Station type error D629H: Station No. range error
D62DH	Failed to start data link	The system failed to start data link due to any of the following causes. Remove the cause of the problem, and retry the operation. • No station number setting • Own station error • Master station duplication • Station type mismatch • No master station • Invalid station number of the own station • Duplication of the own station number • Own station specified as reserved station • Parameter error • Parameters being sent • Parameters not received (Only the master station, and no slave stations exist.) • Link stop instruction
D630H	CCPASET execution error at local station	• Specify the network number, station type, and station number in the switch setting, and execute the instruction again in the condition in which the network parameters are not set.
D701H	No station specified for Reserved station function disable/temporary error invalid station setting	• Specify relevant station(s) in Reserved station function disable/temporary error invalid station setting (SW0010 to SW0017), and retry the operation.
D706H	Temporary error invalid station setting/cancel or reserved station function disable/enable request execution error (when the own station is a local station)	• For a local station, temporary error invalid station setting/cancel and reserved station function disable/enable cannot be executed. Retry it on the master station.
D70BH	Temporary error invalid station setting/cancel or reserved station function disable/enable request execution error (when concurrently requested to multiple stations)	• Temporary error invalid station setting/cancel by SB0010 and SB0011 and reserved station function disable/enable by SB0012 and SB0013 cannot be executed at the same time. • Turn off all bits in SB0010 to SB0013, and turn on only one bit of them in the relay.
D720H	Data link start/stop instruction out of range	• Check the setting, and then stop or start data link.

Error code	Error	Corrective action
D721H	Link start/stop retry error (to another station)	• Retry the operation after stop or restart of cyclic transmission is completed.
D722H	Link start/stop retry error (to own station)	
D723H	Link start/stop retry error (to entire system)	
D724H	Link start/stop station error	• Check the setting, and then stop or start cyclic transmissions.
D725H	Station type error (station executing data link start/stop to the entire system)	• A local station cannot start or stop data link of all or multiple stations. Execute data link start/stop of all or multiple stations from the master station.
D726H	Transient data request error	• Correct the request command at the request source, and retry the operation.
D727H	Data link start/stop instructing station error	• Link start was instructed from a station different from the station that instructed the link stop. The station instructing a link start must be the same as the station that instructed the link stop. • The method of the link start (data link start instruction in CC-Link IE Field Network diagnostics or by using the link special relay (SB) or link special register (SW) in the program) is different from that of the link stop. Instruct the link start by the same method as used for the link stop instruction. • Link start has failed in the past. Force the system to restart data link.
D728H	Data link start/stop instructing station error	• Link start was instructed during execution of data link. Instruct link start after instruction of link stop.
D780H	History acquisition setting data full	• The area space for writing history acquisition setting data in Network Event History is insufficient. Reset the CPU module, or turn OFF the power and then ON.
D781H	Hardware error	• Refer to corrective action for hardware error. (☞ Page 210, (1) in this section)
D782H	History acquisition setting data error	• The previous history acquisition setting data in Network Event History were not written successfully. Reset the CPU module, or turn OFF the power and then ON.
D783H to D784H	Transient data request error	• The read request in "CC-Link IE Field Network Diagnostics" is incorrect. Close the CC-Link IE Field Network diagnostics dialog box, and request it again. • Check the read request data at the request source station, and retry the operation.
D785H	Flash ROM failure	• A number of data writes to the flash ROM has exceeded its limit. Replace a master/local module and board.
D786H	Flash ROM failure	• The flash ROM may be failed. Perform hardware and self-loopback tests. (☞ Page 52, Section 4.5.3, Page 53, Section 4.5.4)
D800H to D805H	Hardware error	• Refer to corrective action for hardware error. (☞ Page 210, (1) in this section)
D806H	Receive queue full	• Reduce the frequency of transient transmission and then retry the operation. • Check if the cables and switching hub are connected properly. • Using the COM instruction, increase the processing frequency of transient transmission.
D807H	Hardware error	• Refer to corrective action for hardware error. (☞ Page 210, (1) in this section)
D80AH to D80FH	Parameter error	• Write the network parameters again to the programmable controller. • If this error persists, please consult your local Mitsubishi service center or representative, explaining a detailed description of the problem.
D812H to D813H	Parameter check result error	
D814H to D819H	Hardware error	• Refer to corrective action for hardware error. (☞ Page 210, (1) in this section)
D81AH	CPU module stop error (Board driver stop error)	• Check the error on the "PLC Diagnostics" screen in GX Works2, and take action. If the error is occurring on the board, check it in the event viewer. (☞ Page 189, Section 16.7.7)
D81BH	Programmable controller power failure	• The power is OFF. Turn it ON.

Error code	Error	Corrective action
D81DH to D825H	Buffer memory start parameter error	• Correct the following settings in the buffer memory start parameter area D81DH: Total number of slave stations D81FH: Station number range D820H: Total number of slave stations D821H: Slave station setting information D822H: Station type D823H: Offset values or points assigned to the devices of each station D824H: Setting flag D825H: Setting flag, application parameter, and information setting data
D826H	Flash ROM failure	• A number of data writes to the flash ROM has exceeded its limit. Check the network event history and configure the setting not to generate events consecutively. This error code cannot be cleared. To clear this error code, please consult your local Mitsubishi service center or representative.
D827H	Communication RAM failure	• Refer to corrective action for hardware error. (☞ Page 210, (1) in this section)
D902H	Incorrect online test data	• Check the data at the station that initiated the online test, and retry the test. • If this error persists, please consult your local Mitsubishi service center or representative, explaining a detailed description of the problem.
D903H	Communication test retry error	• After completion of the communication test, retry it.
D905H	Communication monitoring time in communication test timed out	• Check the network condition by CC-Link IE Field Network diagnostics, take action, and retry the operation. • Check if the routing parameters are correctly set.
D906H	Transmission completion wait time in communication test timed out	• Check the network condition by CC-Link IE Field Network diagnostics, take action, and retry the operation. • Reduce the frequency of transient transmission and then retry the operation. • When the mode of the master station is "Online (High Speed Mode)", change it to "Online (Normal Mode)" and retry the operation. • Check if the routing parameters are correctly set.
D909H	Header information error in transient data	• Correct the header information at the request source, and retry the operation.
D90AH	Double communication test data received	• Check the network condition by CC-Link IE Field Network diagnostics, take action, and retry the operation.
D90BH	Incorrect number of stations	• Check the network condition by CC-Link IE Field Network diagnostics, and take action. • If the number of slave stations per network is more than 120, reduce it to 120 or less.
D90CH	Communication target station specification error	• Check "Communication Destination Setting" of the communication test, and retry the operation.
D90DH	Cable test retry error	• After completion of the cable test, retry it.
DA00H to DAE7H	Hardware error	• Refer to corrective action for hardware error. (☞ Page 210, (1) in this section)
DAE8H	Switch setting error	• When using the CCPASET instruction, check the intelligent function module switch settings, and write the setting data to the CPU module. • When not using the CCPASET instruction, clear the intelligent function module switch settings, and write the setting data to the CPU module. • If this error persists, please consult your local Mitsubishi service center or representative, explaining a detailed description of the problem.
DAF1H	Hardware error	• Refer to corrective action for hardware error. (☞ Page 210, (1) in this section)
DAF2H	Failed to write to flash ROM	• The flash ROM may be faulty.
DAF3H	MAC address read error	• Refer to corrective action for hardware error. (☞ Page 210, (1) in this section)
DAF5H to DAF7H	Hardware error	• Refer to corrective action for hardware error. (☞ Page 210, (1) in this section)

Error code	Error	Corrective action
DAF8H to DAF9H	Flash ROM failure	• The flash ROM may be failed. Perform hardware and self-loopback tests. • Refer to corrective action for hardware error. (☞ Page 210, (1) in this section)

(1) Corrective action for hardware error

- A malfunction may have occurred due to noise.
- Check the wire and cable lengths and grounding condition of each device, and take measures against noise. (☞ Page 43, CHAPTER 4)
- Hardware may be faulty.
- Test the board alone. (☞ Page 191, Section 16.7.10 (1))

APPENDIX

Appendix 1 Precautions for Accessing Redundant CPU System

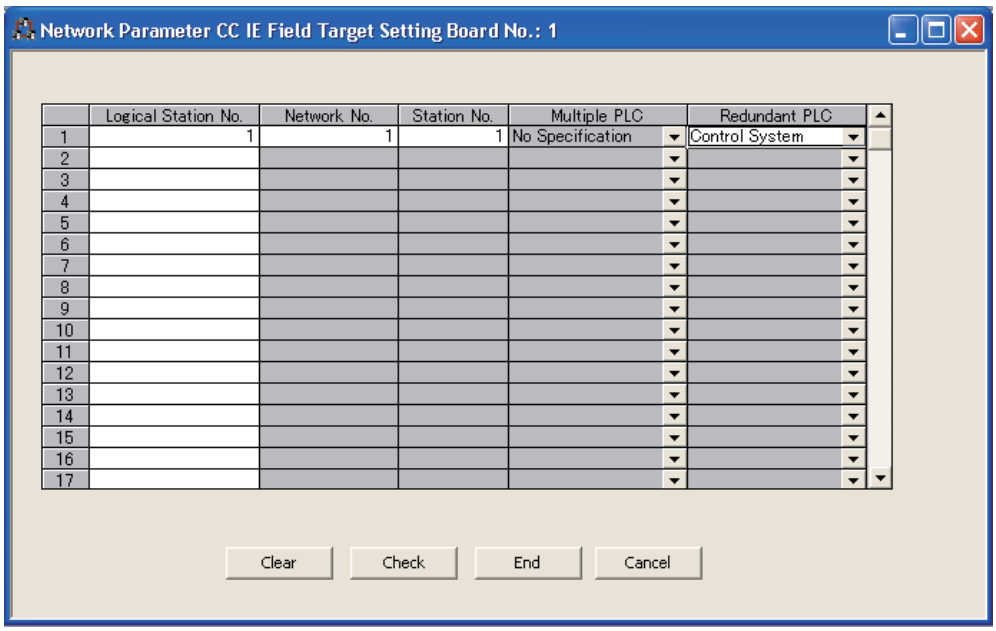
This section explains precautions for accessing a redundant CPU system via CC-Link IE Controller Network or MELSECNET/H network using the CC-Link IE Field Network board.

(1) Redundant CPU specification

When the system (control system, standby system, system A, system B) of the Redundant CPU is specified to access the Redundant CPU, the Logical station No. set on the "Target setting" screen of the CC IE Field Utility is used for access.

For the Logical station No. setting, refer to the following section.

☞ Page 120, Section 10.2.6



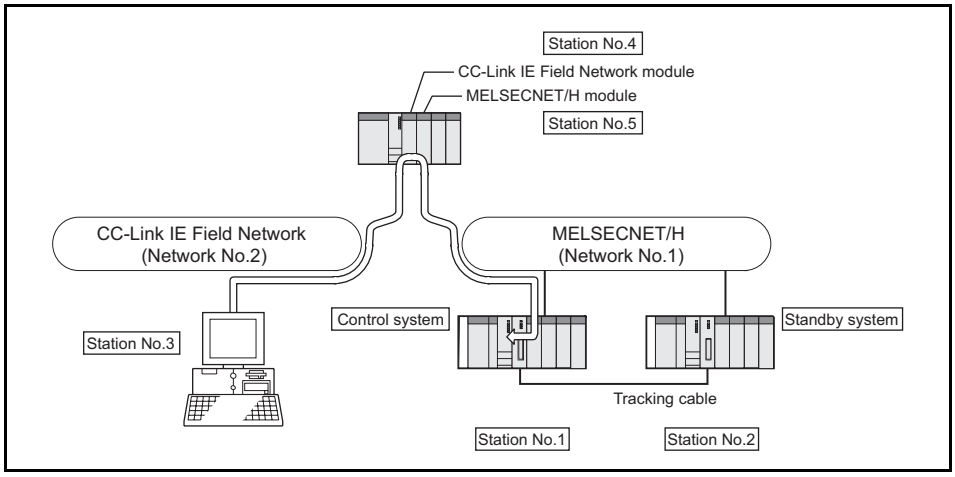
(2) Operation at occurrence of system switching

When system switching occurs during access to the Redundant CPU, access to the Redundant CPU set for the Logical station No. is continued.

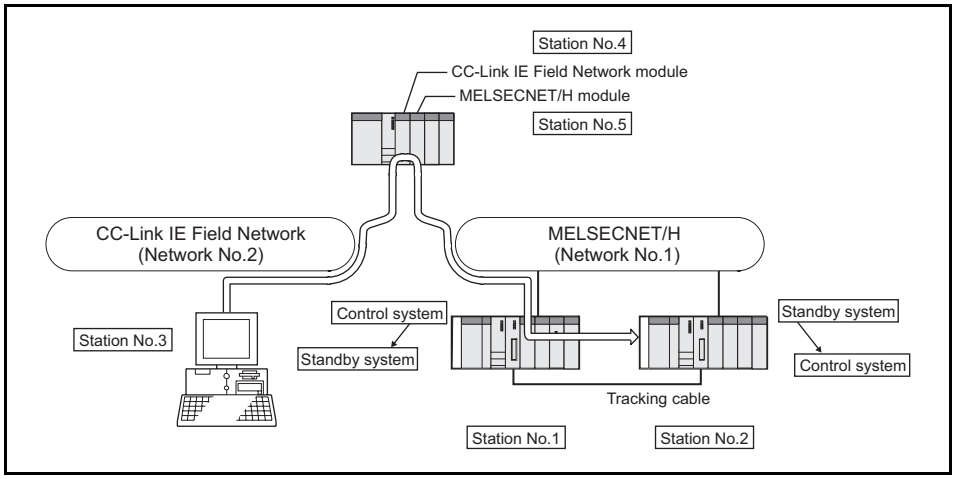
(Example) When the following Logical station No.66 was specified for access

Logical station No.66
Network No.: 1
Station No.: 1
Multiple PLC: Not specified
Redundant PLC: Control system

Before system switching



After system switching



Point

To check which system in the Redundant CPU system is being accessed by the CC-Link IE Field Network board, create a program to monitor the following special relays.
The flag status does not change even if the tracking cable is disconnected.

- When checking which system is being accessed, System A or System B

Link Special Relay	System A	System B	At the time of TRK.CABLE ERR. (Error code: 6120) occurrence (System not determined.)
SM1511 (System A identification flag)	ON	OFF	OFF
SM1512 (System B identification flag)	OFF	ON	OFF

- When checking the operation system status

Link Special Relay	Control system	Standby system	At the time of TRK.CABLE ERR. (Error code: 6120) occurrence (System not determined.)
SM1515 (Control system judgment flag)	ON	OFF	OFF
SM1516 (Standby system judgment flag)	OFF	ON	OFF

(3) Retry processing for error that occurs during system switching processing

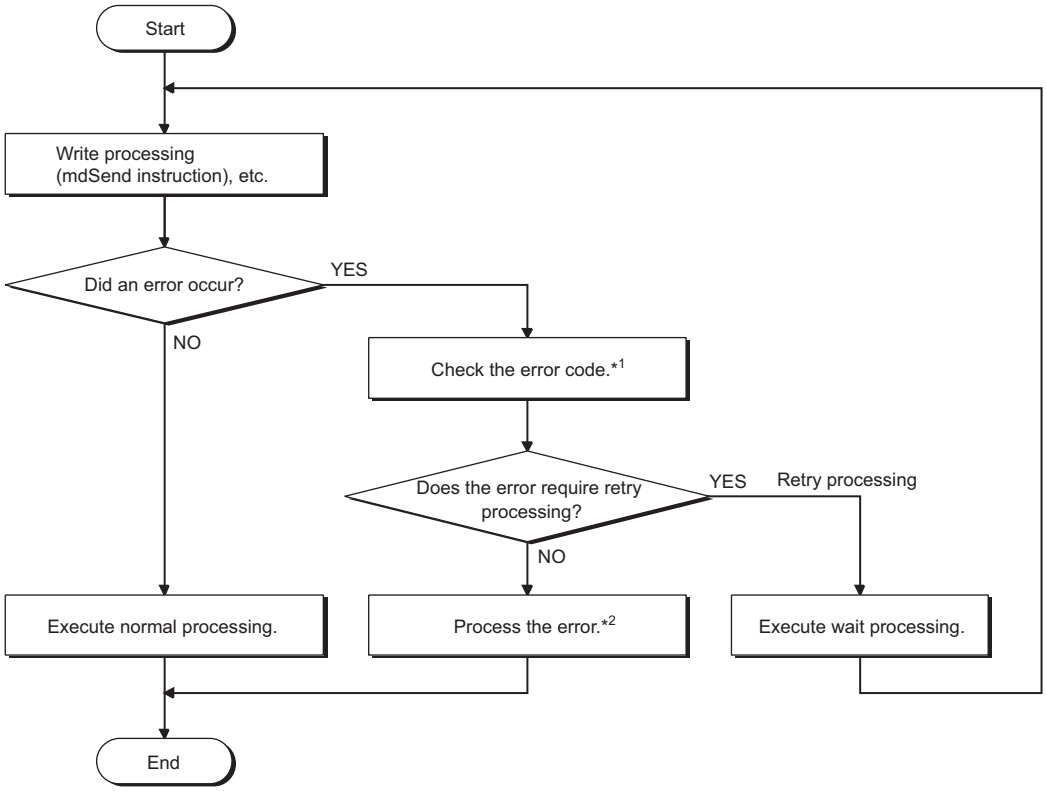
When the MELSEC data link library is used to access the Redundant CPU during system switching being processed by the Redundant CPU, a system switching error (error code: 4248H), CPU starting error (error code: 4004H), other system CPU module error (error code: 4245H), access destination illegal error (error code: FFDFH) or similar error occurs.
In this case, create a user program that checks the error code and performs retry processing as necessary.

(a) The following indicates the functions that result in error if executed during system switching.

	Functions that result in error by system switching
MELSEC data link library	mdDevSetEx, mdDevRstEx, mdRandREx, mdRandWEx,mdReceiveEx, mdSendEx, mdControl, mdDevRst, mdDevSet, mdRandR, mdRandW, mdReceive, mdSend, mdTypeRead

(b) Error occurrence

The following example gives a flowchart for error occurrence at batch write.



*1 : For details and corrective action of the error code, refer to the following manual.

QCPU User's Manual (Hardware Design, Maintenance and Inspection)

*2 : Execute retry processing as required depending on the system specifications.

(4) Automatic switching of communication path

When a communication error occurs during access to the Redundant CPU connected via MELSECNET/H, the communication path is automatically switched to continue access to the control system.
Hereinafter, this automatic switching of the communication path is referred to as path switching.

The following describes the path switching conditions, checking method of path switching occurrence, and access examples of path switching.

(a) Path switching conditions

When access is being processed under the following conditions, access to the Redundant CPU is continued by path switching even though a communication error occurs.

	Conditions for continued access
Operation mode	Backup mode, Separate mode
Redundant CPU specification	Control system, Standby system, System A, System B

Note, however, that if a tracking error*1 had already occurred at a start of communication, access to the control system is not continued by path switching even if tracking is recovered after that.

*1 : Includes the status in which either Redundant CPU is powered OFF or reset.

(b) Checking method of path switching occurrence

When the system is communicating with the redundant system specified, whether communication is continued by path switching due to communication error occurrence can be estimated.
Create a program that monitors the following special relay and special registers to check the occurrence of path switching.

<Special relay and special registers to be monitored and estimated possibility of path switching>

SM1600*1	SD1590*2	SD1690*2	Possibility of path switching	Reference
OFF	Either one is other than 0		Since a system switching request from the network module was detected, path switching may have been executed.	Page 216, (4)(c) in this section Figure 1
ON	0	0	Since another system error occurred, path switching may have been executed.	Page 216, (4)(c) in this section Figure 2
ON	Either one is other than 0		Since another system error occurred or a system switching request from the network module was detected, path switching may have been executed.	Page 216, (4)(c) in this section Figure 1, Figure 2

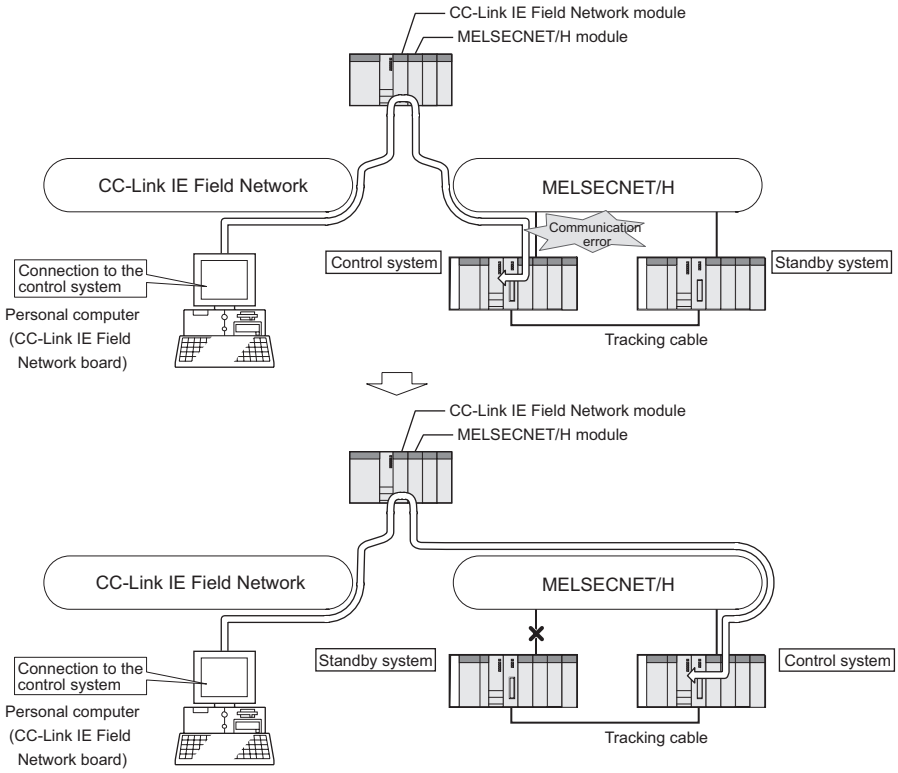
*1 : Even if SM1600 is ON, path switching does not occur when the CPU is not accessed via the tracking cable.
*2 : When using SM1600, SD1590, and SD1690 to estimate the occurrence of path switching for the Redundant CPU connected via MELSECNET/H, check the following items on the Redundant settings in the network parameter of GX Developer.
- Issue system switch in Cable disconnection timeout
- Issue system switch in communication error

Check the following based on the statuses of the above special relay and special registers, and remove the error cause.
- Check the Redundant CPU for an error.
- Check the tracking cable status and whether the tracking cable is correctly connected.
- Check both the relevant network module and the network where that relevant network module is connected for an error.

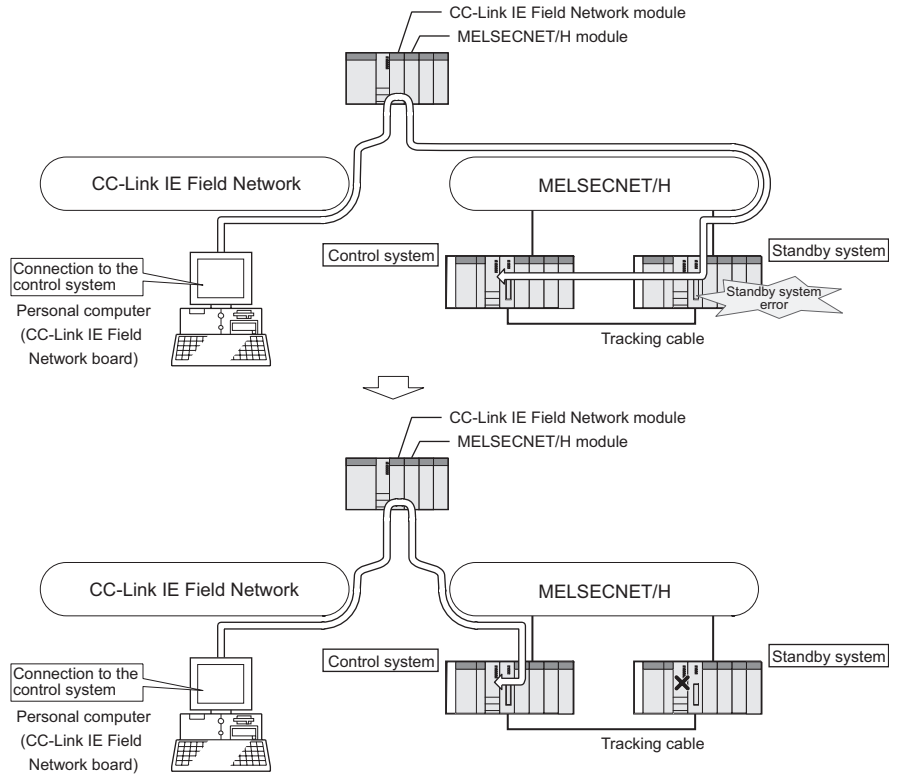
(c) Access examples of path switching

The following shows examples of path switching during access to the control system.

<Figure 1 When system switching occurs due to communication error>



<Figure 2 When system switching occurs due to standby system error>

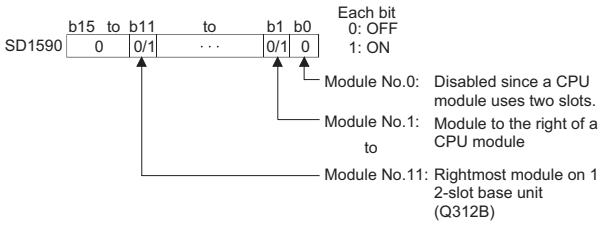
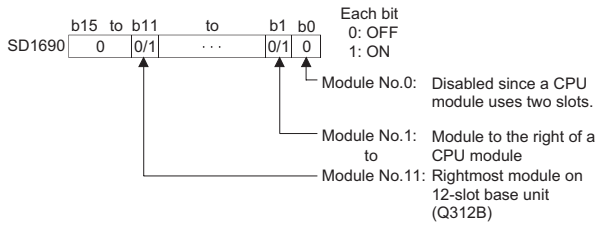


Point

- Path switching is not executed when a communication to the Redundant CPU specified at Logical station No. is faulty at communication start[*1] (A communication error occurs.)
  When a communication is faulty, refer to Page 215, (4)(b) in this section and Page 216, (4)(c) in this section and clear the communication disturbance.
  *1 : First communication after execution of the mdOpen function in the MELSEC data link library (communications using the mdReceiveEx, mdSendEx, mdDevRstEx, mdDevSetEx, mdRandREx, mdRandWEx, mdReceive, mdSend, mdControl, mdDevRst, mdDevSet, mdRandR. mdRandW or mdTypeRead function).
- If other station access (including the programmable controller CPU other than the Redundant CPU) is made to 257 or more stations simultaneously, communication path may not be automatically switched.

Remark

The following table explains details of the special relay and special registers to be monitored when estimating the occurrence of path switching.

No.	Name	Description	Description details
SM1600	Other system error flag	OFF: No error ON: Error	• Turns ON when an error occurs by redundant system error check. (Turns ON when any of bits for SD1600 turns ON.) • Remains OFF when no errors are present.
SD1590	No. of module for which system switching request is issued from the network module in own system	No. of module for which system switching request is issued from the network module in own system	• Any of the following bits turns on corresponding to the No. of the module for which system switching request is issued from the network module in own system. • Turned OFF by the system after the error of the relevant module is resolved by the user.  • For No. of module for which system switching request is issued from the network module in another system, refer to SD1690.
SD1690	No. of module for which system switching request is issued from the network module in another system	No. of module for which system switching request is issued from the network module in another system	• Any of the following bits turns ON corresponding to the No. of the module for which system switching request is issued from the network module in another system. • Turned OFF by the system after the error of the relevant module is resolved by the user.  • For No. of module for which system switching request is issued from the network module in own system, refer to SD1590.

Appendix 2 Details of Buffer Memory Addresses

This section describes the buffer memory of the CC-Link IE Field Network board.

Address (Decimal (Hexadecimal))	Name	Reference
0 to 18975 (0000H to 4A1FH)	Link device area	Page 218, Appendix 2.1
19456 to 20463 (4C00H to 4FEFH)	Offset/size information	Page 220, Appendix 2.2
20512 to 20536 (5020H to 5038H)	Own station information	Page 222, Appendix 2.3
20544 to 24383 (5040H to 5F3FH)	Other station information	Page 223, Appendix 2.4

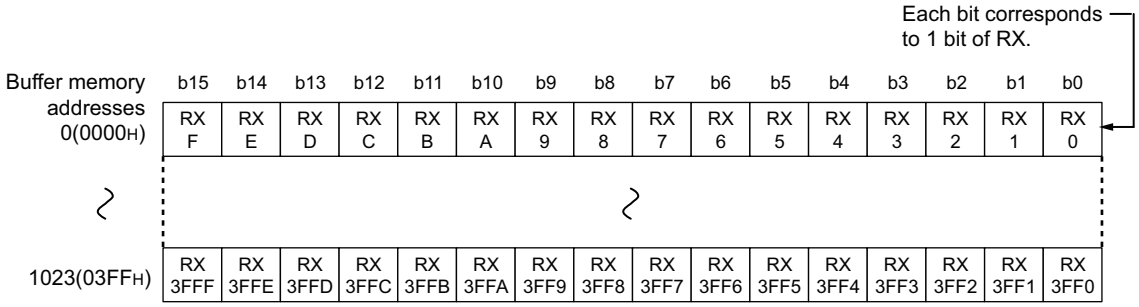
Appendix 2.1 Link device area

The areas to store the values of link devices.

Address (Decimal (Hexadecimal))	Name	Reference
0 to 1023 (0000H to 03FFH)	Remote input (RX)	Page 218, (1) in this section
1024 to 2047 (0400H to 07FFH)	Remote output (RY)	Page 218, (2) in this section
2048 to 10239 (0800H to 27FFH)	Remote register (RWw)	Page 219, (3) in this section
10240 to 18431 (2800H to 47FFH)	Remote register (RWr)	Page 219, (4) in this section
18432 to 18463 (4800H to 481FH)	Link special relay (SB)	Page 219, (5) in this section
18464 to 18975 (4820H to 4A1FH)	Link special register (SW)	Page 219, (6) in this section

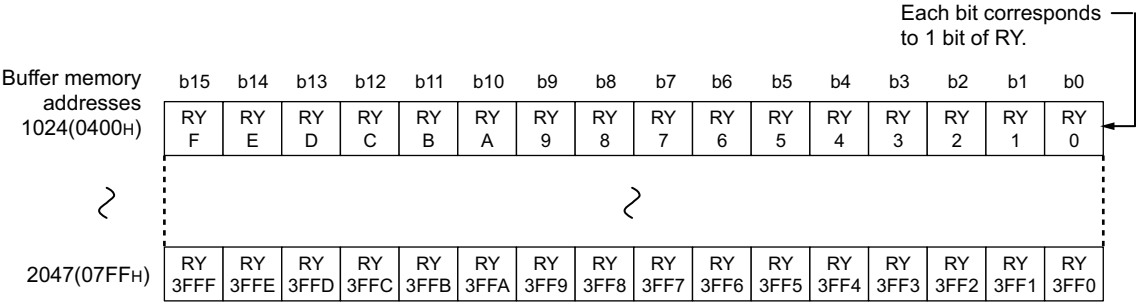
(1) Remote input (RX) (Address 0 to 1023 (0000H to 03FFH))

The areas to store the value of RX. The RX start number and number of points for each station number can be checked by the RX offset/size information. (☞ Page 220, Appendix 2.2(1))


Each bit corresponds to 1 bit of RX.
Buffer memory addresses
0(0000H)
b15 b14 b13 b12 b11 b10 b9 b8 b7 b6 b5 b4 b3 b2 b1 b0
RX F RX E RX D RX C RX B RX A RX 9 RX 8 RX 7 RX 6 RX 5 RX 4 RX 3 RX 2 RX 1 RX 0
1023(03FFH)
RX 3FFF RX 3FFE RX 3FFD RX 3FFC RX 3FFB RX 3FFA RX 3FF9 RX 3FF8 RX 3FF7 RX 3FF6 RX 3FF5 RX 3FF4 RX 3FF3 RX 3FF2 RX 3FF1 RX 3FF0

(2) Remote output (RY) (Address 1024 to 2047(0400H to 07FFH))

The areas to store the value of RY. The RY start number and number of points for each station number can be checked by the RY offset/size information. (☞ Page 220, Appendix 2.2(2))


Each bit corresponds to 1 bit of RY.
Buffer memory addresses
1024(0400H)
b15 b14 b13 b12 b11 b10 b9 b8 b7 b6 b5 b4 b3 b2 b1 b0
RY F RY E RY D RY C RY B RY A RY 9 RY 8 RY 7 RY 6 RY 5 RY 4 RY 3 RY 2 RY 1 RY 0
2047(07FFH)
RY 3FFF RY 3FFE RY 3FFD RY 3FFC RY 3FFB RY 3FFA RY 3FF9 RY 3FF8 RY 3FF7 RY 3FF6 RY 3FF5 RY 3FF4 RY 3FF3 RY 3FF2 RY 3FF1 RY 3FF0

(3) Remote register (RWw) (Address 2048 to 10239(0800H to 27FFH))

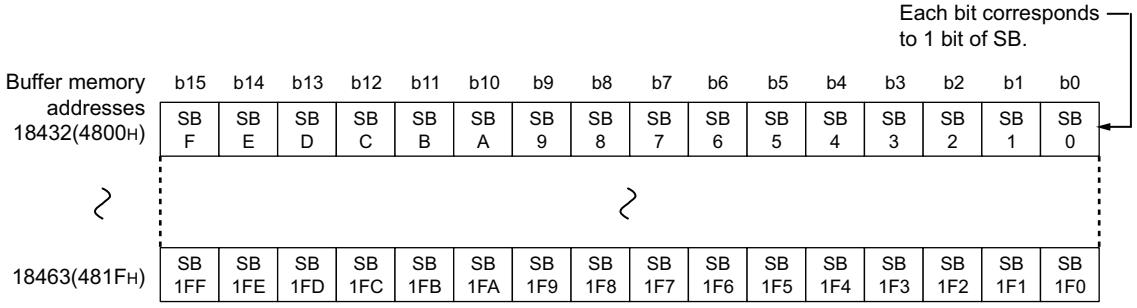
The areas to store the value of RWw. The RWw start number and number of points for each station number can be checked by the RWw/offset size information. (☞ Page 221, Appendix 2.2(3))

(4) Remote register (RWr) (Address 10240 to 18431(2800H to 47FFH))

The areas to store the value of RWr. The RWr start number and number of points for each station number can be checked by the RWr offset/size information. (☞ Page 221, Appendix 2.2(4))

(5) Link special relay (SB) (Address 18432 to 18463(4800H to 481FH))

The areas to store the value of SB.


Each bit corresponds to 1 bit of SB.
Buffer memory addresses
b15 b14 b13 b12 b11 b10 b9 b8 b7 b6 b5 b4 b3 b2 b1 b0
18432(4800H)
SB F SB E SB D SB C SB B SB A SB 9 SB 8 SB 7 SB 6 SB 5 SB 4 SB 3 SB 2 SB 1 SB 0
18463(481FH)
SB 1FF SB 1FE SB 1FD SB 1FC SB 1FB SB 1FA SB 1F9 SB 1F8 SB 1F7 SB 1F6 SB 1F5 SB 1F4 SB 1F3 SB 1F2 SB 1F1 SB 1F0

(6) Link special register (SW) (Address 18464 to 18975(4820H to 4A1FH))

The areas to store the value of SW.

Appendix 2.2 Offset/size information

The areas to store the device start number and number of points for each station number.

Address (Decimal (Hexadecimal))	Name	Reference
19456 to 19695 (4C00H to 4CEFH)	RX offset/size information	Page 220, (1) in this section
19712 to 19951 (4D00H to 4DEFH)	RY offset/size information	Page 220, (2) in this section
19968 to 20207 (4E00H to 4EEFH)	RWw offset/size information	Page 221, (3) in this section
20224 to 20463 (4F00H to 4FEFH)	RWr offset/size information	Page 221, (4) in this section

(1) RX offset/size information (Address 19456 to 19695 (4C00H to 4CEFH))

The areas to store the RX start number and number of points for each station No.

Buffer memory addresses		
19456(4C00H)	Station No.1	Offset
19457(4C01H)	Station No.1	Size (in units of words)
19458(4C02H)	Station No.2	Offset
19459(4C03H)	Station No.2	Size (in units of words)
19694(4CEEH)	Station No.120	Offset
19695(4CEFH)	Station No.120	Size (in units of words)

The offset and size buffer memory address for each station number can be calculated using the formula below.

- Offset buffer memory address = 19456 + (station number -1) × 2
- Size buffer memory address = 19457 + (station number -1) × 2

(2) RY offset/size information (Address 19712 to 19951 (4D00H to 4DEFH))

The areas to store the RY start number and number of points for each station No.

Buffer memory addresses		
19712(4D00H)	Station No.1	Offset
19713(4D01H)	Station No.1	Size (in units of words)
19714(4D02H)	Station No.2	Offset
19715(4D03H)	Station No.2	Size (in units of words)
19950(4DEEH)	Station No.120	Offset
19951(4DEFH)	Station No.120	Size (in units of words)

The offset and size buffer memory address for each station number can be calculated using the formula below.

- Offset buffer memory address = 19712 + (station number -1) × 2
- Size buffer memory address = 19713 + (station number -1) × 2

(3) RWw offset/size information (Address 19968 to 20207 (4E00H to 4EEFH))

The areas to store the RWw start number and number of points for each station number.

Buffer memory addresses		
19968(4E00H)	Station No.1	Offset
19969(4E01H)	Station No.1	Size (in units of words)
19970(4E02H)	Station No.2	Offset
19971(4E03H)	Station No.2	Size (in units of words)
20206(4EEEH)	Station No.120	Offset
20207(4EEFH)	Station No.120	Size (in units of words)

The offset and size buffer memory address for each station number can be calculated using the formula below.

- Offset buffer memory address = 19968 + (station number -1) × 2
- Size buffer memory address = 19969 + (station number -1) × 2

(4) RWr offset/size information (Address 20224 to 20225 (4F00H to 4FEFH))

The areas to store the RWr start number and number of points for each station number.

Buffer memory addresses		
20224(4F00H)	Station No.1	Offset
20225(4F01H)	Station No.1	Size (in units of words)
20226(4F02H)	Station No.2	Offset
20227(4F03H)	Station No.2	Size (in units of words)
20462(4FEEH)	Station No.120	Offset
20463(4FEFH)	Station No.120	Size (in units of words)

The offset and size buffer memory address for each station number can be calculated using the formula below.

- Offset buffer memory address = 20224 + (station number -1) × 2
- Size buffer memory address = 20225 + (station number -1) × 2

Appendix 2.3 Own station information

The areas to store the own station's information on the network.

(1) Own station (network card) information (Address 20512 to 20515 (5020H to 5023H))

Address (Decimal (Hexadecimal))	Name	Description
20512 (5020H)	Manufacturer code	The own station's board information is stored.
20513 (5021H)	Model type	
20514 (5022H)	Model code	
20515 (5023H)	Version	

(2) Own station (controller) information (Address 20520 to 20536 (5028H to 5038H))

Address (Decimal (Hexadecimal))	Name	Description
20520 (5028H)	Controller information valid/invalid flag	The status of valid or invalid of the value stored in the own station (controller) information is stored. 0: Invalid 1: Valid
20521 (5029H)	Manufacturer code	The own station's board information is stored.
20522 (502AH)	Model type	
20523 (502BH)	Model code	
20524 (502CH)	Version	
20525 to 20534 (502DH to 5036H)	Model name string	
20535 to 20536 (5037H to 5038H)	Vendor-specific device information	

Appendix 2.4 Other station information

The areas to store the other stations' information on the network.

(1) Other station (network card) information (station number 1) (Address 20544 to 20551 (5040H to 5047H))

Address (Decimal (Hexadecimal))	Name	Description
20544 (5040H)	Manufacturer code	The information of other station (station No.1) is stored.
20545 (5041H)	Model type	
20546 (5042H)	Model code	
20547 (5043H)	Version	
20548 to 20551 (5044H to 5047H)	System area	-

(2) Other station (controller) information (station number 1) (Address 20552 to 20575 (5048H to 505FH))

Address (Decimal (Hexadecimal))	Name	Description
20552 (5048H)	Controller information valid/invalid flag	The status of valid or invalid of the value stored in the other station (controller) information (station number 1) is stored. 0: Invalid 1: Valid
20553 (5049H)	Manufacturer code	The own station's information is stored.
20554 (504AH)	Model type	
20555 (504BH)	Model code	
20556 (504CH)	Version	
20557 to 20566 (504DH to 5056H)	Model name string	
20567 to 20568 (5057H to 5058H)	Vendor-specific device information	
20569 to 20575 (5059H to 505FH)	System area	-

(3) Other station information (station number 2 to 120) (Address 20576 to 24383 (5060H to 5F3FH))

The information for station number 2 to 120 is stored in the same order as the information for other station (network card) information (station number 1) and other station (controller) information (station number 1).

Appendix 3 Link Special Relay (SB) List

A link special relay (SB) is turned ON/OFF depending on various factors at data link. Any error status of the data link can be confirmed by using and monitoring it in the program.

(1) Application of the link special relay (SB)

By using link special relays (SB), the status of the CC-Link IE Field Network can be checked.

(2) Ranges of areas that are turned ON/OFF by users and by the system

The following is a range when the link special relays (SB) are assigned from SB0000 to SB01FF.

- Range turned ON/OFF by users: SB0000 to SB001F
- Range turned ON/OFF by the system: SB0020 to SB01FF

(3) Link Special Relay (SB) List

A list of link special relays (SB) when they are assigned from SB0000 to SB01FF is described on the following pages.

Point

- Do not turn ON or OFF areas whose numbers are not on the link special relay (SB) list.
  Doing so may cause malfunction of the programmable controller system.

Number	Name	Description	Availability	
			Master station	Local station
SB0000	Link start (own station)	The own station's cyclic transmission is restarted. OFF: No start direction ON: Start direction (enabled during start-up) (Conditions) • This is enabled when the Baton pass status (own station) (SB0047) is OFF. • For SB0000 to SB0003, this is enabled when only one of them is turned ON.	○	○
SB0001	Link stop (own station)	The own station's cyclic transmission is stopped. OFF: No stop direction ON : Stop direction (enabled during start-up) (Conditions) • This is enabled when the Baton pass status (own station) (SB0047) is OFF. • For SB0000 to SB0003, this is enabled when only one of them is turned ON.	○	○
SB0002	System link start	Cyclic transmission of the entire system is restarted. The station where cyclic transmission is restarted is specified by the Link stop/start direction (SW0000 to SW0008). OFF: No start direction ON : Start direction (enabled during start-up) (Conditions) • This is enabled when the Baton pass status (own station) (SB0047) is OFF. • For SB0000 to SB0003, this is enabled when only one of them is turned ON.	○	×
SB0003	System link stop	Cyclic transmission of the entire system is stopped. The station where cyclic transmission is stopped is specified by the Link stop/start direction (SW0000 to SW0008). OFF: No stop direction ON : Stop direction (enabled during start-up) (Conditions) • This is enabled when the Baton pass status (own station) (SB0047) is OFF. • For SB0000 to SB0003, this is enabled when only one of them is turned ON.	○	×
SB0006	Clear communication error count	Clears the link special registers for the communication error (SW0068 to SW006B, SW0074 to SW0077, SW007C to SW007F, SW0120 to SW0127, SW0130 to SW0137, SW0140 to SW0147, and SW0150 to SW0157). OFF: No clear direction ON : Clear direction	○	○
SB0009	Event count clear	This clears the Event history status (SB007A) and Event count (SW007A). OFF: No clear direction ON : Clear direction (Errors are not counted while this is ON.)	○	○
SB0010	Temporary error invalid request	Stations specified in Reserved station function disable/temporary error invalid station setting (SW0010 to SW0017) are set as temporary error invalid stations. OFF: No request ON : Request issued	○	×
SB0011	Temporary error invalid setting cancel request	Stations specified in Reserved station function disable/temporary error invalid station setting (SW0010 to SW0017) are canceled from temporary error invalid stations. OFF: No request ON : Request issued	○	×

Number	Name	Description	Availability	
			Master station	Local station
SB0012	Reserved station function disable request	Stations specified in Reserved station function disable/temporary error invalid station setting (SW0010 to SW0017) are temporarily canceled from reserved stations. OFF: No request ON : Request issued	○	×
SB0013	Reserved station specification enable request	Stations specified in Reserved station function disable/temporary error invalid station setting (SW0010 to SW0017) are returned to reserved stations. Only stations that were temporarily canceled can be returned to reserved stations. OFF: No request ON : Request issued	○	×
SB0030	RECV execution request flag (1)	This stores the data reception status of the own station's channel 1. OFF: No received data ON : Received data found (Conditions) • This is enabled when the Baton pass status (own station) (SB0047) is OFF.	○	○
SB0031	RECV execution request flag (2)	This stores the data reception status of the own station's channel 2. OFF: No received data ON : Received data found (Conditions) • This is enabled when the Baton pass status (own station) (SB0047) is OFF.	○	○
SB0040	Network type (own station)	Stores the network type of own station. ON : Field Network	○	○
SB0043	Mode (own station)	Stores the mode of own station. OFF: Online ON : Not online	○	○
SB0044	Station setting (own station) (1)	This stores if the own station is a master station or not. OFF: Not master station ON : Master station	○	○
SB0045	Station setting (own station) (2)	This stores if the own station is a local station or not. OFF: Not local station ON : Local station (Conditions) • This is enabled when the Station setting (own station) (1) (SB0044) is OFF.	×	○
SB0047	Baton pass status (own station)	Stores the baton pass status for the own station (transient transmission possible). OFF: Normal ON : Error If an error occurs, the cause of the error can be checked by the Baton pass status (own station) (SW0047) and Cause of baton pass interruption (SW0048). Depending on the timing of the link refresh, the Baton pass status (own station) (SW0047) and Cause of baton pass interruption (SW0048) and the update may be offset by one sequence scan.	○	○

Number	Name	Description	Availability	
			Master station	Local station
SB0049	Data link status (own station)	Stores the own station's data link status. OFF: Normal ON : Error If an error occurs, the cause of the error can be checked by Cause of data link stop (SW0049). Depending on the timing of the link refresh, the Cause of data link stop (SW0049) and the update may be offset by one sequence scan.	○	○
SB004A	Own station's CPU status (1)	Stores the continuation error status of the own station's CPU module. OFF: Normal ON : Continuation error	○	○
SB004B	Own station's CPU status (2)	Stores the stop error status of the own station's CPU module. OFF: Normal ON : Stop error	○	○
SB004C	CPU RUN status (own station)	Stores the RUN status of the own station's CPU module. OFF: Normal ON : Reset status, driver stop by H/W error	○	○
SB004D	Received parameter error	Stores the status of the received parameter. (own parameter status during master station) OFF: Parameter normal ON : Parameter error	○	○
SB0050	Link start request accept status (own station)	Turns ON when a cyclic transmission start request by Link start (own station) (SB0000) is accepted. OFF: Not accepted (SB0000 is OFF) ON : Start accepted (SB0000 is ON) (Conditions) • This is enabled when the Baton pass status (own station) (SB0047) is OFF.	○	○
SB0051	Link start completion status (own station)	Turns ON when the Link start request accept status (own station) (SB0050) turns ON, and cyclic transmission start is completed. OFF: Start not completed (SB0000 is OFF) ON : Start completed (SB0000 is ON) (Conditions) • This is enabled when the Baton pass status (own station) (SB0047) is OFF.	○	○
SB0052	Link stop request accept status (own station)	Turns ON when a cyclic transmission stop request by Link stop (own station) (SB0001) is accepted. OFF: Not accepted (SB0001 is OFF) ON : Stop accepted (SB0001 is ON) (Conditions) • This is enabled when the Baton pass status (own station) (SB0047) is OFF.	○	○
SB0053	Link stop completion status (own station)	Turns ON when the Link stop request accept status (own station) (SB0052) turns ON, and cyclic transmission stop is completed. OFF: Stop not completed (SB0001 is OFF) ON : Stop completed (SB0001 is ON) (Conditions) • This is enabled when the Baton pass status (own station) (SB0047) is OFF.	○	○

Number	Name	Description	Availability	
			Master station	Local station
SB0054	System link start request accept status	Turns ON when a cyclic transmission start request by System link start (SB0002) is accepted. OFF: Not accepted (SB0002 is OFF) ON : Start accepted (SB0002 is ON) (Conditions) • This is enabled when the Baton pass status (own station) (SB0047) is OFF.	○	×
SB0055	System link start completion status	Turns ON when the System link start request accept status (SB0054) turns ON, and cyclic transmission start is completed. OFF: Start not completed (SB0002 is OFF) ON : Start completed (SB0002 is ON) (Conditions) • This is enabled when the Baton pass status (own station) (SB0047) is OFF.	○	×
SB0056	System link stop request accept status	Turns ON when a cyclic transmission stop request by System link stop (SB0003) is accepted. OFF: Not accepted (SB0003 is OFF) ON : Stop accepted (SB0003 is ON) (Conditions) • This is enabled when the Baton pass status (own station) (SB0047) is OFF.	○	×
SB0057	System link stop completion status	Turns ON when the System link stop accept status (SB0056) turns ON, and cyclic transmission stop is completed. OFF: Stop not completed (SB0003 is OFF) ON : Stop completed (SB0003 is ON) (Conditions) • This is enabled when the Baton pass status (own station) (SB0047) is OFF.	○	×
SB0058	Temporary error invalid request accept status	Turns ON when the Temporary error invalid request (SB0010) is accepted. OFF: Not accepted (SB0010 is OFF) ON : Invalid accepted (SB0010 is ON)	○	○
SB0059	Temporary error invalid setting completion status	Turns ON when the Temporary error invalid request accept status (SB0058) is turned ON and the temporary error invalid processing is completed. OFF: Not completed ON : Completed or error completion	○	○
SB005A	Temporary error invalid setting cancel request accept status	Turns ON when the Temporary error invalid setting cancel request (SB0011) is accepted. OFF: Not accepted ON : Cancel accepted	○	○
SB005B	Temporary error invalid setting cancel completion status	Turns ON when the Temporary error invalid setting cancel request accept status (SB005A) is turned ON and the temporary error invalid setting cancel process is completed. OFF: Not completed ON : Completed or error completion	○	○
SB005C	Reserved station function disable request accept status	Turns ON when the Reserved station function disable request (SB0012) is accepted. OFF: Not accepted ON : Cancel accepted	○	○
SB005D	Reserved station function disable completion status	Turns ON when the Reserved station function disable request accept status (SB005C) is turned ON and disabling the reserved station function is completed. OFF: Not completed ON : Completed or error completion	○	○

Number	Name	Description	Availability	
			Master station	Local station
SB005E	Reserved station specification enable request accept status	Turns ON when the Reserved station specification enable request (SB0013) is accepted. OFF: Not accepted ON: Enable accepted	○	○
SB005F	Reserved station specification enabled status	Turns ON when the Reserved station specification enable request accept status (SB005E) is turned ON and the reserved station specification enable processing is completed. OFF: Not completed ON: Completed or error completion	○	○
SB0060	Constant link scan status	Stores the constant link scan status. OFF: Constant link scan is disabled ON: Constant link scan is enabled (Conditions) • This is enabled when the Data link status (own station) (SB0049) is OFF.	○	○
SB0065	Loopback status	Stores loopback execution status. The loopback station numbers can be checked by Loopback station number 1 (SW0070) and Loopback station number 2 (SW0071). OFF: Normal (no loopback stations) ON : Error (lookback being performed) (Loopback stations exist.) (Condition) • This relay is valid while Loopback function setting status (SB0078) is on.	○	×
SB006A	PORT1 linkup status (own station)	Stores the linkup status of PORT1 (own station). OFF: Linkup in progress ON : Linkdown in progress The time that the linkup starts after power-on or Ethernet cable connection may vary. Normally, it takes a few seconds. Depending on device status on the line, a linkup process is repeated, resulting in the increase in the time.	○	○
SB006B	PORT2 linkup status (own station)	Stores the linkup status of PORT2 (own station). OFF: Linkup in progress ON : Linkdown in progress The time that the linkup starts after power-on or Ethernet cable connection may vary. Normally, it takes a few seconds. Depending on device status on the line, a linkup process is repeated, resulting in the increase in the time.	○	○
SB006C	PORT1 error frame reception status (own station)	Stores if an error frame is received at the own station's PORT1. OFF: An error frame has not yet been received ON : An error frame has been received	○	○
SB006D	PORT2 error frame reception status (own station)	Stores if an error frame is received at the own station's PORT2. OFF: An error frame has not yet been received ON : An error frame has been received	○	○
SB006E	PORT1 error frame detection (own station)	Stores if an error frame was received from power-on until the present at the own station's PORT1. OFF: An error frame has not yet been received ON : An error frame has been received	○	○
SB006F	PORT2 error frame detection (own station)	Stores if an error frame was received from power-on until the present at the own station's PORT2. OFF: An error frame has not yet been received ON : An error frame has been received	○	○
SB0072	Scan mode setting information	Stores the scan mode setting status. OFF: Asynchronous mode ON : Synchronous mode	○	○

Number	Name	Description	Availability	
			Master station	Local station
SB0073	Operation status specified for CPU stop error	Stores the operating status during a CPU stop error due to parameters. OFF: Stop ON : Continue	○	○
SB0074	Reserved station specification status	Stores the reserved station specification status due to parameters. The station number set for a reserved station can be checked by Reserved station specification (SW00C0 to SW00C7). OFF: Not specified ON : Specified	○	○
SB0075	Error invalid station setting status	Stores the Error invalid station setting status due to parameters. The station number set for the error invalid station can be checked by Error invalid station setting (SW00D0 to SW00D7). OFF: Not specified ON : Specified	○	○
SB0077	Parameter reception status	Stores the parameter reception status from the master station. OFF: Reception completed ON : Reception not completed	×	○
SB0078	Loopback function setting status	Stores the setting status of the loopback function configured by the parameter. OFF: Not used ON: Used	○	×
SB007A	Event history status	Stores the network event history occurrence. OFF: No event history ON : Event history found If the event history is found, the cumulative number of network event history can be checked by the Event count (SW007A). Depending on the timing of the link refresh, the Event count (SW007A) and the update may be offset by one sequence scan. This area is cleared when Event count clear (SB0009) is turned ON.	○	○
SB007B	Input data status of data link faulty station	Stores the own station's setting status for "Data Link Faulty Station Setting". OFF: OFF or cleared to 0 ON : Hold	○	○
SB007D	Hold/clear status setting for CPU STOP	Stores the own station's setting status for "Output Setting during CPU STOP". OFF: Hold ON : Clear (ALL OFF)	○	○
SB0090	Hardware test completion status	Stores the hardware test completion status. OFF: Not executed or execution in progress ON : Completed If completed, the completion status can be checked by Hardware test normal/abnormal end (SB0091).	○	○
SB0091	Hardware test normal/abnormal end	Stores the hardware test normal completion or abnormal completion status. OFF: Normal completion ON: Abnormal completion (Conditions) • This is enabled when Hardware test completion status (SB0090) is ON.	○	○
SB0092	Self-loopback test completion status	Stores the self-loopback test completion status. OFF: Not executed or execution in progress ON : Completed If completed, the completion status can be checked by Self-loopback test normal/abnormal end (SB0093).	○	○

Number	Name	Description	Availability	
			Master station	Local station
SB0093	Self-loopback test normal/abnormal end	Stores the self-loopback test normal completion or abnormal completion status. OFF: Normal completion ON : Abnormal completion (Conditions) • This is enabled when Self-loopback test completion status (SB0092) is ON.	○	○
SB0094	Loop test completion status	Stores the loop test completion status. OFF: Not executed or execution in progress ON : Completed If completed, the completion status can be checked by Loop test normal/ abnormal end (SB0095).	○	×
SB0095	Loop test normal/ abnormal end	Stores the loop test normal completion or abnormal completion status. OFF: Normal completion ON : Abnormal completion (Conditions) • This is enabled when Loop test completion status (SB0094) is ON.	○	×
SB009A	Loop test request accept status	Stores the loop test request accept status. OFF: Loop test not accepted ON : Loop test accepted The master station is turned ON during loop test mode. The slave stations are turned ON during the loop test and turned OFF when the loop test is completed.	○	○
SB00A0	Baton pass status (each station)	Stores the baton pass status for each station. OFF: All stations normal ON : Faulty station found If a faulty station is found, the status of each station can be checked by Baton pass status (each station) (SW00A0 to SW00A7). Depending on the timing of the link refresh, Baton pass status (each station) (SW00A0 to SW00A7) and the update may be offset by one sequence scan. (Conditions) • This is enabled when the Baton pass status (own station) (SB0047) is OFF. • Reserved stations and stations higher than the maximum station number are ignored.	○	○
SB00A1	Baton pass status (master station)	Stores the baton pass status for master station. OFF: Normal ON : Error (Conditions) • This is enabled when the Baton pass status (own station) (SB0047) is OFF.	○	○

Number	Name	Description	Availability	
			Master station	Local station
SB00B0	Data link status (each station)	Stores the cyclic transmission status for each station. OFF: Cyclic transmission for all stations in progress ON : Cyclic transmission not executed for some stations If cyclic transmission are not executed for some stations, the status of each station can be checked by Data link status (each station) (SW00B0 to SW00B7). Depending on the timing of the link refresh, Data link status (each station) (SW00B0 to SW00B7) and the update may be offset by one sequence scan. (Conditions) • This is enabled when the Baton pass status (own station) (SB0047) is OFF. • Reserved stations and stations higher than the maximum station number are ignored.	○	○
SB00B1	Data link status (master station)	Stores the cyclic transmission status for the master station. OFF: Normal ON : Error (Conditions) • This is enabled when the Baton pass status (own station) (SB0047) is OFF.	○	○
SB00C0	Reserved station specification	Stores if there are any reserved stations. OFF: No reserved stations ON : Reserved stations found If a reserved station is found, the status of each station can be checked by Reserved station specification (SW00C0 to SW00C7). Depending on the timing of the link refresh, Reserved station specification (SW00C0 to SW00C7) and the update may be offset by one sequence scan. (Conditions) • This is enabled when the Baton pass status (own station) (SB0047) is OFF.	○	○
SB00D0	Error invalid station setting	Stores if there are any error invalid stations. OFF: No error invalid stations ON : Error invalid station found If an error invalid station is found, the status of each station can be checked by Error invalid station setting (SW00D0 to SW00D7). Depending on the timing of the link refresh, Error invalid station setting (SW00D0 to SW00D7) and the update may be offset by one sequence scan. (Conditions) • This is enabled when the Baton pass status (own station) (SB0047) is OFF.	○	○
SB00E0	Temporary error invalid station status	Stores if there are any temporary error invalid stations. OFF: No temporary error invalid stations ON : Temporary error invalid station found If a temporary error invalid station is found, the status of each station can be checked by Temporary error invalid station setting (SW00E0 to SW00E7). Depending on the timing of the link refresh, Temporary error invalid station setting (SW00E0 to SW00E7) and the update may be offset by one sequence scan. (Conditions) • This is enabled when the Baton pass status (own station) (SB0047) is OFF.	○	○

Number	Name	Description	Availability	
			Master station	Local station
SB00F0	CPU RUN status (each station)	Stores the RUN status of each station's CPU module. OFF: All stations are in RUN or STEP-RUN status ON : Station in STOP or PAUSE status found If a station in STOP or PAUSE status is found, the status of each station can be checked by the CPU RUN status (each station) (SW00F0 to SW00F7). Depending on the timing of the link refresh, the CPU RUN status (each station) (SW00F0 to SW00F7) and the update may be offset by one sequence scan. (Conditions) • This is enabled when the Baton pass status (own station) (SB0047) is OFF.	○	○
SB00F1	CPU RUN status (master station)	Stores the RUN status of the master station's CPU module. OFF: RUN or STEP-RUN status ON : STOP or PAUSE status (Conditions) • This is enabled when the Baton pass status (own station) (SB0047) is OFF.	○	○
SB0100	CPU operation status (each station) (1)	Stores the stop error status for each station. OFF: All stations normal ON : Station with stop error found If a station with a stop error is found, the status of each station can be checked by the CPU operation status (each station) (1) (SW0100 to SW0107). Depending on the timing of the link refresh, the CPU operation status (each station) (1) (SW0100 to SW0107) and the update may be offset by one sequence scan. (Conditions) • This is enabled when the Baton pass status (own station) (SB0047) is OFF.	○	○
SB0101	CPU operation status (master station) (1)	Stores the stop error status of the master station's CPU module. OFF: Normal ON : Stop error occurred (Conditions) • This is enabled when the Baton pass status (own station) (SB0047) is OFF.	○	○
SB0110	CPU operation status (each station) (2)	Stores the continuation error status for each station. OFF: All stations normal ON : Station with continuation error found If a station with a continuation error is found, the status of each station can be checked by the CPU operation status (each station) (2) (SW0110 to SW0117). Depending on the timing of the link refresh, the CPU operation status (each station) (2) (SW0110 to SW0117) and the update may be offset by one sequence scan. (Conditions) • This is enabled when the Baton pass status (own station) (SB0047) is OFF.	○	○
SB0111	CPU operation status (master station) (2)	Stores the continuation error status of the master station's CPU module. OFF: Normal ON : Continuation error occurred (Conditions) • This is enabled when the Baton pass status (own station) (SB0047) is OFF.	○	○

Number	Name	Description	Availability	
			Master station	Local station
SB0120	PORT1 error frame reception status (each station)	Stores if an error frame is received at each station's PORT1. OFF: An error frame has not yet been received at any stations. ON : An error frame has been received at one or more stations. If an error frame has been received, the status of each station can be checked by the PORT1 error frame reception status (each station) (SW0120 to SW0127). Depending on the timing of the link refresh, the PORT1 error frame reception status (each station) (SW0120 to SW0127) and the update may be offset by one sequence scan. (Conditions) • This is enabled when the Baton pass status (own station) (SB0047) is OFF.	○	○
SB0121	PORT1 error frame reception status (master station)	Stores if an error frame is received at the master station's PORT1. OFF: An error frame has not yet been received ON : An error frame has been received (Conditions) • This is enabled when the Baton pass status (own station) (SB0047) is OFF.	○	○
SB0130	PORT2 error frame reception status (each station)	Stores if an error frame is received at each station's PORT2. OFF: An error frame has not yet been received at any stations. ON : An error frame has been received at one or more stations. If an error frame has been received, the status of each station can be checked by the PORT2 error frame reception status (each station) (SW0130 to SW0137). Depending on the timing of the link refresh, the PORT2 error frame reception status (each station) (SW0130 to SW0137) and the update may be offset by one sequence scan. (Conditions) • This is enabled when the Baton pass status (own station) (SB0047) is OFF.	○	○
SB0131	PORT2 error frame reception status (master station)	Stores if an error frame is received at the master station's PORT2. OFF: An error frame has not yet been received ON : An error frame has been received (Conditions) • This is enabled when the Baton pass status (own station) (SB0047) is OFF.	○	○
SB0140	PORT1 error frame detection (each station)	Stores if an error frame was received from power-on until the present at each station's PORT1. OFF: An error frame has not been received at any stations ON : An error frame has been received at one or more stations If an error frame has been received, the status of each station can be checked by the PORT1 error frame detection (each station) (SW0140 to SW0147). Depending on the timing of the link refresh, the PORT1 error frame detection (each station) (SW0140 to SW0147) and the update may be offset by one sequence scan. (Conditions) • This is enabled when the Baton pass status (own station) (SB0047) is OFF.	○	○

Number	Name	Description	Availability	
			Master station	Local station
SB0141	PORT1 error frame detection (master station)	Stores if an error frame was received from power-on until the present at the master station's PORT1. OFF: An error frame has not yet been received ON : An error frame has been received at least once (Conditions) • This is enabled when the Baton pass status (own station) (SB0047) is OFF.	○	○
SB0150	PORT2 error frame detection (each station)	Stores if an error frame was received from power-on until the present at each station's PORT2. OFF: An error frame has not been received at any stations ON : An error frame has been received at one or more stations If an error frame has been received, the status of each station can be checked by the PORT2 error frame detection (each station) (SW0150 to SW0157). Depending on the timing of the link refresh, the PORT2 error frame detection (each station) (SW0150 to SW0157) and the update may be offset by one sequence scan. (Conditions) • This is enabled when the Baton pass status (own station) (SB0047) is OFF.	○	○
SB0151	PORT2 error frame detection (master station)	Stores if an error frame was received from power-on until the present at the master station's PORT2. OFF: An error frame has not yet been received ON : An error frame has been received at least once (Conditions) • This is enabled when the Baton pass status (own station) (SB0047) is OFF.	○	○
SB0170	Parameter error status (each station)	Stores the parameter status for each station. OFF: No parameter errors for any stations ON : Parameter error detected at one or more stations If a parameter error occurs, the status of each station can be checked by the Parameter error status (each station) (SW0170 to SW0177). Depending on the timing of the link refresh, the Parameter error status (each station) (SW0170 to SW0177) and the update may be offset by one sequence scan. (Conditions) • This is enabled when the Baton pass status (own station) (SB0047) is OFF. • Reserved stations and stations higher than the maximum station number are ignored.	○	○
SB0180	Reserved station function disable status	This stores if a reserved station function is disabled. OFF: No disabled reserved station function ON : Disabled reserved station function found If a reserved station function is disabled, the status of each station can be checked by the Reserved station function disable status (SW0180 to SW0187). Depending on the timing of the link refresh, the Reserved station function disable status (SW0180 to SW0187) and the update may be offset by one sequence scan. (Conditions) • This is enabled when the Baton pass status (own station) (SB0047) is OFF.	○	○

Appendix 4 Link Special Register (SW) List

Link special registers (SW) store information during data link as numerical values. Error locations and causes can be checked by using and monitoring link special registers (SW) in programs.

(1) Application of link special registers (SW)

By using link special registers (SW), the status of the CC-Link IE Field Network can be checked.

(2) Ranges of areas that are turned ON/OFF by users and by the system

The following is a range when the link special register (SW) is assigned from SW0000 to SW01FF.

- Range where data are stored by users: SW0000 to SW001F
- Range where data are stored by the system: SW0020 to SW01FF

(3) Link Special Register (SW) List

A list of link special registers (SW) when they are assigned from SW0000 to SW01FF is described on the following pages.

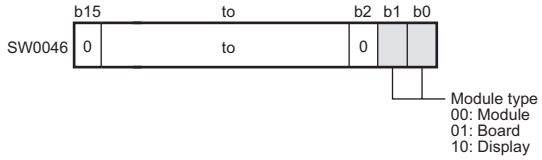
Point

- Do not write any data to an area whose number is not on the link special register (SW) list. Doing so may cause malfunction of the programmable controller system.

<table>
<tr><th rowspan="2">Number</th><th rowspan="2">Name</th><th rowspan="2">Description</th><th colspan="2">Availability</th></tr>
<tr><th>Master station</th><th>Local station</th></tr>
<tr><td>SW0000</td><td rowspan="2">Link stop/start direction</td><td>Sets the station where cyclic transmission is stopped or started.
00H: Own station
01H: All stations
02H: Specified station
80H: Own station (Forced link start)
81H: All stations (Forced link start)
82H: Specified station (Forced link start)
Stopping/starting of cyclic transmission is performed by System link start (SB0002) or System link stop (SB0003).</td><td>○</td><td>×</td></tr>
<tr><td>SW0001
to
SW0008</td><td>When setting 02H or 82H by the Link stop/start direction (SW0000), this sets the station number that stops or starts cyclic transmission.
0: No direction issued for stop or start
1: Direction issued for stop or start
<table><tr><th></th><th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>b11</th><th>b10</th><th>b9</th><th>b8</th><th>b7</th><th>b6</th><th>b5</th><th>b4</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th></tr><tr><td>SW0001</td><td>16</td><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>9</td><td>8</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td></tr><tr><td>SW0002</td><td>32</td><td>31</td><td>30</td><td>29</td><td>28</td><td>27</td><td>26</td><td>25</td><td>24</td><td>23</td><td>22</td><td>21</td><td>20</td><td>19</td><td>18</td><td>17</td></tr><tr><td>SW0003</td><td>48</td><td>47</td><td>46</td><td>45</td><td>44</td><td>43</td><td>42</td><td>41</td><td>40</td><td>39</td><td>38</td><td>37</td><td>36</td><td>35</td><td>34</td><td>33</td></tr><tr><td>SW0004</td><td>64</td><td>63</td><td>62</td><td>61</td><td>60</td><td>59</td><td>58</td><td>57</td><td>56</td><td>55</td><td>54</td><td>53</td><td>52</td><td>51</td><td>50</td><td>49</td></tr><tr><td>SW0005</td><td>80</td><td>79</td><td>78</td><td>77</td><td>76</td><td>75</td><td>74</td><td>73</td><td>72</td><td>71</td><td>70</td><td>69</td><td>68</td><td>67</td><td>66</td><td>65</td></tr><tr><td>SW0006</td><td>96</td><td>95</td><td>94</td><td>93</td><td>92</td><td>91</td><td>90</td><td>89</td><td>88</td><td>87</td><td>86</td><td>85</td><td>84</td><td>83</td><td>82</td><td>81</td></tr><tr><td>SW0007</td><td>112</td><td>111</td><td>110</td><td>109</td><td>108</td><td>107</td><td>106</td><td>105</td><td>104</td><td>103</td><td>102</td><td>101</td><td>100</td><td>99</td><td>98</td><td>97</td></tr><tr><td>SW0008</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>120</td><td>119</td><td>118</td><td>117</td><td>116</td><td>115</td><td>114</td><td>113</td></tr></table>Each number in the table represents station No.</td><td>○</td><td>×</td></tr>
<tr><td>SW0009</td><td>Arrival monitoring time (RIRD/RIWT)</td><td>Specify the monitoring time until instruction completion.
If the direction is not completed within the time, it is resent for the number of resends specified by the Number of resends (RIRD/RIWT) (SW000B).
0: 10 seconds (default value)
1 to 360: 1 to 360 seconds
If a value outside the above settings is made, operation is performed for 360 seconds.

If the Number of resends (RIRD/RIWT) (SW000B) is set, the time until the dedicated instruction fails is shown below.
(Number of resends (RIRD/RIWT) + 1) × Arrival monitoring time (RIRD/RIWT)</td><td>○</td><td>○</td></tr>
<tr><td>SW000B</td><td>Number of resends (RIRD/RIWT)</td><td>If the instruction is not completed within the monitoring time specified by the Arrival monitoring time (RIRD/RIWT) (SW0009), this specifies the number of times that the instruction is resent.
0: Not resent (default value)
1 to 7: 1 to 7 times
If a value outside the above settings is made, the instruction is resent 7 times.</td><td>○</td><td>○</td></tr>
</table>

Number	Name	Description	Availability	
			Master station	Local station
SW0010 to SW0017	Reserved station function disable/ temporary error invalid station setting	Specifies the slave stations where reserved station function disable or temporary error invalid station setting/cancel is performed. 0: Not specified 1: Specified b15 b14 b13 b12 b11 b10 b9 b8 b7 b6 b5 b4 b3 b2 b1 b0 SW0010: 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 SW0011: 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 SW0012: 48 47 46 45 44 43 42 41 40 39 38 37 36 35 34 33 SW0013: 64 63 62 61 60 59 58 57 56 55 54 53 52 51 50 49 SW0014: 80 79 78 77 76 75 74 73 72 71 70 69 68 67 66 65 SW0015: 96 95 94 93 92 91 90 89 88 87 86 85 84 83 82 81 SW0016: 112 111 110 109 108 107 106 105 104 103 102 101 100 99 98 97 SW0017: — — — — — — — — 120 119 118 117 116 115 114 113 Each number in the table represents station No. (Conditions) • Some stations cannot be specified as reserved station function disable or temporary error invalid station setting/cancel. (Page 161, Section 13.2.7, Page 162, Section 13.2.8) • Stations higher than the maximum station number are ignored.	○	×
SW001A	Number of resends (REMFR/REMTO)	Specifies the number of resends for the REMFR/REMTO instruction. 0: 0 times (default) Outside the above: Number of times that is set (Conditions) • This is enabled when the Baton pass status (own station) (SB0047) is OFF.	○	×
SW001B	Response wait timer (REMFR/REMTO)	Specifies the response wait time for the REMFR/REMTO instruction. 0: 10 seconds (default) Outside the above: Number of seconds that is set (Conditions) • This is enabled when the Baton pass status (own station) (SB0047) is OFF.	○	×
SW0030	Send/receive instruction (1) processing result	Stores the processing results of the link dedicated instruction that used the own station's channel 1. 0: Normal completion 1 or higher: Abnormal completion (Page 199, Section 16.9)	○	○
SW0031	Send/receive instruction (2) processing result	Stores the processing results of the link dedicated instruction that used the own station's channel 2. 0: Normal completion 1 or higher: Abnormal completion (Page 199, Section 16.9)	○	○
SW0040	Network number	Stores the network number of own station. Range: 1 to 239	○	○
SW0042	Station number	Stores the station number of own station. Range: 125 (master station), 1 to 120 (slave station), 0 (station number is not set)	○	○

Number	Name	Description	Availability	
			Master station	Local station
SW0043	Mode status	Stores the mode of own station. 0: Online (Normal Mode) (Local station: Online) 1: Online (High Speed Mode) 2: Offline 6: Loop test 7: Self-loopback test 9: Hardware test	○	○
SW0046	Module type	Stores the own station's hardware status. 	○	○
SW0047	Baton pass status (own station)	Stores the baton pass status for the own station (transient transmission possible). 0: Data link in progress 2: Baton pass in progress 3: Baton pass stopped 4: Test in progress 5: Offline	○	○
SW0048	Cause of baton pass interruption	Stores the cause of interruption in the communication (baton pass) of own station. 00H: At normal communication or power-on 30H: Cable disconnection 33H: Disconnection or reconnection in progress 40H: Offline mode 41H: Hardware test 42H: Self-loopback test	○	○
SW0049	Cause of data link stop	Stores the cause which stopped the data link of own station. 00H: At normal communication or power-on 01H: Stop command issued 02H: Monitoring timeout 05H: No slave stations (master station only) 10H: Parameter not received (local stations only) 11H: Own station number out of range 12H: Own station specified as reserved 13H: Station number duplication (own station) 14H: Master station duplication 16H: Station number not set 18H: Parameter error 19H: Parameter communication in progress 1AH: Station type mismatch 20H: CPU module stop error 60H: Incorrect ring topology configuration (master station only)	○	○

Number	Name	Description	Availability	
			Master station	Local station
SW004A	Data link stop request station	Stores the station number of the station that performed the cyclic transmission stop request for the own station. Range: 125 (master station), 1 to 120 (local station) The cyclic transmission stop request is performed by System link stop (SB0003). (Conditions) • This is enabled when the Baton pass status (own station) (SB0047) is OFF.	○	○
SW004B	Own station's CPU status	Stores the own station's status. 00H: No module mounted 01H: STOP (Normal) 02H: STOP (Stop error occurring) 03H: STOP (Continuation error occurring) 04H: RUN (Normal) 05H: RUN (Continuation error occurring) 06H: STEP-RUN 07H: PAUSE 0EH: Reset in progress 0FH: Initial processing	○	○
SW004C	Parameter setting status	Stores the parameter status. 0: Normal 1 or higher: Abnormal (☞ Page 199, Section 16.9) (Conditions) • This is enabled when the Received parameter error (SB004D) is ON.	○	○
SW0050	Data link start status (own station)	Stores the results when cyclic transmission is started by Link start (own station) (SB0000). 0: Normal 1 or higher: Abnormal (☞ Page 199, Section 16.9) When Link start (own station) (SB0000) is turned OFF, the stored error definition is cleared. (Conditions) • This is enabled when the Baton pass status (own station) (SB0047) is OFF.	○	○
SW0051	Data link stop status (own station)	Stores the results when cyclic transmission is stopped by Link stop (own station) (SB0001). 0: Normal 1 or higher: Abnormal (☞ Page 199, Section 16.9) When Link stop (own station) (SB0001) is turned OFF, the stored error definition is cleared. (Conditions) • This is enabled when the Baton pass status (own station) (SB0047) is OFF.	○	○

Number	Name	Description	Availability	
			Master station	Local station
SW0052	Data link start status (entire system)	Stores the results when cyclic transmission is started by System link start (SB0002). 0: Normal 1 or higher: Error definition in own station (☞ Page 199, Section 16.9) When System link start (SB0002) is turned OFF, the stored error definition is cleared. (Conditions) • This is enabled when the Baton pass status (own station) (SB0047) is OFF.	○	×
SW0053	Data link stop status (entire system)	Stores the results when cyclic transmission is stopped by System link stop (SB0003). 0: Normal 1 or higher: Error definition in own station (☞ Page 199, Section 16.9) When System link stop (SB0003) is turned OFF, the stored error definition is cleared. (Conditions) • This is enabled when the Baton pass status (own station) (SB0047) is OFF.	○	×
SW0054	Temporary error invalid station setting result	Stores the results when executing the temporary error invalid station setting. 0: Normal 1 or higher: Abnormal (☞ Page 199, Section 16.9) When Temporary error invalid request (SB0010) is turned OFF, the stored error definition is cleared.	○	×
SW0055	Temporary error invalid station setting cancel result	Stores the results when canceling the temporary error invalid station setting. 0: Normal 1 or higher: Abnormal (☞ Page 199, Section 16.9) When Temporary error invalid setting cancel request (SB0011) is turned OFF, the stored error definition is cleared.	○	×
SW0056	Result of reserved station function disable	Stores the result when disabling reserved station function. 0: Normal 1 or higher: Abnormal (☞ Page 199, Section 16.9) When Reserved station function disable request (SB0012) is turned OFF, the stored error definition is cleared.	○	×
SW0057	Result of reserved station function enable	Stores the result when reserved station function disable is undone 0: Normal 1 or higher: Abnormal (☞ Page 199, Section 16.9) When Reserved station specification enable request (SB0013) is turned OFF, the stored error definition is cleared.	○	×
SW0058	Number of total slave stations (setting)	Stores the number of total slave stations that are set by the parameters. Range: 1 to 120	○	○

Number	Name	Description	Availability	
			Master station	Local station
SW0059	Number of total slave stations (current value)	Stores the number of total slave stations that are actually connected by data link in the CC-Link IE Field Network. Range: 1 to 120 (0 when own station is disconnected)	○	○
SW005A	Maximum baton pass station	Stores the maximum station number of the stations where the baton pass is performed. Range: 1 to 120 (0 when own station is disconnected) (Conditions) • This is enabled when the Baton pass status (own station) (SB0047) is OFF.	○	○
SW005B	Maximum cyclic transmission station	Stores the maximum station number of the station where the cyclic transmission is performed. Range: 1 to 120 (0 when own station is disconnected) (Conditions) • This is enabled when the Data link status (own station) (SB0049) is OFF.	○	○
SW0060	Maximum link scan time	Stores the maximum value of the link scan time during cyclic transmission. (Unit: ms) (Conditions) • This is enabled when the Baton pass status (own station) (SB0047) is OFF.	○	○
SW0061	Minimum link scan time	Stores the minimum value of the link scan time during cyclic transmission. (Unit: ms) (Conditions) • This is enabled when the Baton pass status (own station) (SB0047) is OFF.	○	○
SW0062	Current link scan time	Stores the current value of the link scan time during cyclic transmission. The stored value contains a maximum error of 1 ms. (Unit: ms) (Conditions) • This is enabled when the Baton pass status (own station) (SB0047) is OFF.	○	○
SW0063	Constant link scan set value	Stores the setting value of the contact link scan that is set in the supplementary setting. 0: No setting 1 to 200: Setting value of contact link scan time (Unit: ms) (Conditions) • This is enabled when the Data link status (own station) (SB0049) is OFF.	○	○

Number	Name	Description	Availability	
			Master station	Local station
SW0064	Connection status (own station)	Stores the connection status of own station. 00H: Normal (communication in progress on PORT1 and PORT2) 01H: Normal (communication in progress on PORT1, cable disconnected on PORT2) 04H: Normal (loopback communication in progress on PORT1, cable disconnected on PORT2) 10H: Normal (cable disconnected on PORT1, communication in progress on PORT2) 11H: Disconnecting (cable disconnected on PORT1 and PORT2) 12H: Disconnecting (cable disconnected on PORT1, establishing line on PORT2) 21H: Disconnecting (establishing line on PORT1, cable disconnected on PORT2) 22H: Disconnecting (establishing line on PORT1 and PORT2) 40H: Normal (cable disconnected on PORT1, loopback communication in progress on PORT2)	○	×
SW0066	Actual link scan time (lower 1 word)	Stores the link scan time during cyclic transmission. (Unit: μs)	○	○
SW0067	Actual link scan time (upper 1 word)			
SW0068	PORT1 line error occurrence rate (max.)	Stores the occurrence rate (maximum value) of received error frames at the own station's PORT1. (Unit: %) When Clear communication error count (SB0006) is turned ON, the stored occurrence rate is cleared.	○	○
SW0069	PORT1 line error occurrence rate (present)	Stores the occurrence rate (current value) of received error frames at the own station's PORT1. (Unit: %) When Clear communication error count (SB0006) is turned ON, the stored occurrence rate is cleared.	○	○
SW006A	PORT2 line error occurrence rate (max.)	Stores the occurrence rate (maximum value) of received error frames at the own station's PORT2. (Unit: %) When Clear communication error count (SB0006) is turned ON, the stored occurrence rate is cleared.	○	○
SW006B	PORT2 line error occurrence rate (present)	Stores the occurrence rate (current value) of received error frames at the own station's PORT2. (Unit: %) When Clear communication error count (SB0006) is turned ON, the stored occurrence rate is cleared.	○	○
SW0070	Loopback station number 1	Stores the number of the station where loopback is being performed. The other loopback station number can be checked by Loopback station number 2 (SW0071). 0: No loopback stations 1 to 120: Slave station 125: Master station 65535: Station number not set If a station whose station number duplicates is performing loopback, this register stores the duplicated number.	○	×

Number	Name	Description	Availability	
			Master station	Local station
SW0071	Loopback station number 2	Stores the number of the station where loopback is being performed. The other loopback station number can be checked by Loopback station number 1 (SW0070). 0: No loopback stations 1 to 120: Slave station 125: Master station 65535: Station number not set If a station whose station number duplicates is performing loopback, this register stores the duplicated number.	○	×
SW0074	PORT1 cable disconnection detection count	Stores the (cumulative) count that was detected for cable disconnections at the PORT1. When Clear communication error count (SB0006) is turned ON, the stored occurrence rate is cleared.	○	○
SW0075	PORT1 receive error detection count	Stores the (cumulative) count that error data was received at the PORT1. The count stores only error data that is not transmitted to all stations. When Clear communication error count (SB0006) is turned ON, the stored count is cleared. (Conditions) • This is enabled when the Mode status (SW0043) is 0 or 1. (during online)	○	○
SW0076	PORT1 total number of received data (lower 1 word)	Stores the (cumulative) count that error data was received at the PORT1. When Clear communication error count (SB0006) is turned ON, the stored count is cleared. (Conditions) • This is enabled when the Mode status (SW0043) is 0 or 1. (during online)	○	○
SW0077	PORT1 total number of received data (upper 1 word)		○	○
SW007A	Event count	Stores the count of the network event history. This stored count is cleared when Event count clear (SB0009) is turned ON.	○	○
SW007C	PORT2 cable disconnection detection count	Stores the (cumulative) count that was detected for cable disconnections at the PORT2. When Clear communication error count (SB0006) is turned ON, the stored count is cleared.	○	×
SW007D	PORT2 receive error detection count	Stores the (cumulative) count that error data was received at the PORT2. The count stores only error data that is not transmitted to all stations. When Clear communication error count (SB0006) is turned ON, the stored count is cleared. (Conditions) • This is enabled when the Mode status (SW0043) is 0 or 1.(during online)	○	×
SW007E	PORT2 total number of received data (lower 1 word)	Stores the (cumulative) count that error data was received at the PORT2. When Clear communication error count (SB0006) is turned ON, the stored count is cleared. (Conditions) • This is enabled when the Mode status (SW0043) is 0 or 1. (during online)	○	×
SW007F	PORT2 total number of received data (upper 1 word)		○	

<table>
<tr><th rowspan="2">Number</th><th rowspan="2">Name</th><th rowspan="2">Description</th><th colspan="2">Availability</th></tr>
<tr><th>Master station</th><th>Local station</th></tr>
<tr><td>SW0080
to
SW009F</td><td>Execution status
(REMFR/REMTO)</td><td>Stores the REMFR/REMTO execution status for each channel.

SW0080 Channel 1 SW008B Channel 12 SW0096 Channel 23
SW0081 Channel 2 SW008C Channel 13 SW0097 Channel 24
SW0082 Channel 3 SW008D Channel 14 SW0098 Channel 25
SW0083 Channel 4 SW008E Channel 15 SW0099 Channel 26
SW0084 Channel 5 SW008F Channel 16 SW009A Channel 27
SW0085 Channel 6 SW0090 Channel 17 SW009B Channel 28
SW0086 Channel 7 SW0091 Channel 18 SW009C Channel 29
SW0087 Channel 8 SW0092 Channel 19 SW009D Channel 30
SW0088 Channel 9 SW0093 Channel 20 SW009E Channel 31
SW0089 Channel 10 SW0094 Channel 21 SW009F Channel 32
SW008A Channel 11 SW0095 Channel 22

0: Normal completion
1 or higher: Abnormal completion (☞ Page 199, Section 16.9)</td><td>○</td><td>○</td></tr>
<tr><td>SW00A0
to
SW00A7</td><td>Baton pass status
(each station)</td><td>Stores the baton pass status for each station.
0: Baton pass normal station
1: Baton pass faulty station

• If multiple stations change from faulty to normal, because they are reconnected to the network one by one per link scan, the time until the status changes to "0: Baton pass normal station" may vary by several seconds.
• If no response is received for one link scan, the station is determined to be a baton pass faulty station.

<table>
<tr><th></th><th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>b11</th><th>b10</th><th>b9</th><th>b8</th><th>b7</th><th>b6</th><th>b5</th><th>b4</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th></tr>
<tr><td>SW00A0</td><td>16</td><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>9</td><td>8</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td></tr>
<tr><td>SW00A1</td><td>32</td><td>31</td><td>30</td><td>29</td><td>28</td><td>27</td><td>26</td><td>25</td><td>24</td><td>23</td><td>22</td><td>21</td><td>20</td><td>19</td><td>18</td><td>17</td></tr>
<tr><td>SW00A2</td><td>48</td><td>47</td><td>46</td><td>45</td><td>44</td><td>43</td><td>42</td><td>41</td><td>40</td><td>39</td><td>38</td><td>37</td><td>36</td><td>35</td><td>34</td><td>33</td></tr>
<tr><td>SW00A3</td><td>64</td><td>63</td><td>62</td><td>61</td><td>60</td><td>59</td><td>58</td><td>57</td><td>56</td><td>55</td><td>54</td><td>53</td><td>52</td><td>51</td><td>50</td><td>49</td></tr>
<tr><td>SW00A4</td><td>80</td><td>79</td><td>78</td><td>77</td><td>76</td><td>75</td><td>74</td><td>73</td><td>72</td><td>71</td><td>70</td><td>69</td><td>68</td><td>67</td><td>66</td><td>65</td></tr>
<tr><td>SW00A5</td><td>96</td><td>95</td><td>94</td><td>93</td><td>92</td><td>91</td><td>90</td><td>89</td><td>88</td><td>87</td><td>86</td><td>85</td><td>84</td><td>83</td><td>82</td><td>81</td></tr>
<tr><td>SW00A6</td><td>112</td><td>111</td><td>110</td><td>109</td><td>108</td><td>107</td><td>106</td><td>105</td><td>104</td><td>103</td><td>102</td><td>101</td><td>100</td><td>99</td><td>98</td><td>97</td></tr>
<tr><td>SW00A7</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>120</td><td>119</td><td>118</td><td>117</td><td>116</td><td>115</td><td>114</td><td>113</td></tr>
</table>
Each number in the table represents a station No.
— is fixed to 0.

(Conditions)
• This is enabled when the Baton pass status (own station) (SB0047) is OFF.
• Reserved stations and stations higher than the maximum station number are ignored.</td><td>○</td><td>○</td></tr>
</table>

<table>
<tr><th rowspan="2">Number</th><th rowspan="2">Name</th><th rowspan="2">Description</th><th colspan="2">Availability</th></tr>
<tr><th>Master station</th><th>Local station</th></tr>
<tr><td>SW00B0
to
SW00B7</td><td>Data link status
(each station)</td><td>Stores the cyclic transmission status for each station.
0: Cyclic transmission normal station
1: Cyclic transmission faulty station

• If multiple stations change from faulty to normal, because they are reconnected to the network one by one per link scan, the time until the status changes to "0: Cyclic transmission normal station" may vary by several seconds.
• If no response is received for several link scans, the station is determined to be a cyclic transmission faulty station.

<table>
<tr><th></th><th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>b11</th><th>b10</th><th>b9</th><th>b8</th><th>b7</th><th>b6</th><th>b5</th><th>b4</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th></tr>
<tr><td>SW00B0</td><td>16</td><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>9</td><td>8</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td></tr>
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(Conditions)
• This is enabled when the Baton pass status (own station) (SB0047) is OFF.
• Stations higher than the maximum station number are ignored.</td><td>○</td><td>○</td></tr>
<tr><td>SW00C0
to
SW00C7</td><td>Reserved station specification</td><td>Stores the setting status of the reserved station.
0: Other than reserved station (also includes stations specified as reserved station disable status)
1: Reserved station

<table>
<tr><th></th><th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>b11</th><th>b10</th><th>b9</th><th>b8</th><th>b7</th><th>b6</th><th>b5</th><th>b4</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th></tr>
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<tr><td>SW00C1</td><td>32</td><td>31</td><td>30</td><td>29</td><td>28</td><td>27</td><td>26</td><td>25</td><td>24</td><td>23</td><td>22</td><td>21</td><td>20</td><td>19</td><td>18</td><td>17</td></tr>
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</table>
Each number in the table represents a station No.
— is fixed to 0.

(Conditions)
• This is enabled when the Baton pass status (own station) (SB0047) is OFF.
• Holds the data immediately before the error.
• This is enabled only for normal stations in the Baton pass status (each station) (SW00A0 to SW00A7).
• Stations higher than the maximum station number are ignored.</td><td>○</td><td>○</td></tr>
</table>

Number	Name	Description	Availability	
			Master station	Local station
SW00D0 to SW00D7	Error invalid station setting	Stores the setting status of error invalid stations. 0: Other than error invalid station 1: Error invalid station b15 b14 b13 b12 b11 b10 b9 b8 b7 b6 b5 b4 b3 b2 b1 b0 SW00D0: 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 SW00D1: 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 SW00D2: 48 47 46 45 44 43 42 41 40 39 38 37 36 35 34 33 SW00D3: 64 63 62 61 60 59 58 57 56 55 54 53 52 51 50 49 SW00D4: 80 79 78 77 76 75 74 73 72 71 70 69 68 67 66 65 SW00D5: 96 95 94 93 92 91 90 89 88 87 86 85 84 83 82 81 SW00D6: 112 111 110 109 108 107 106 105 104 103 102 101 100 99 98 97 SW00D7: — — — — — — — — 120 119 118 117 116 115 114 113 Each number in the table represents a station No. — is fixed to 0. (Conditions) • This is enabled when the Baton pass status (own station) (SB0047) is OFF. • Stations higher than the maximum station number are ignored.	○	○
SW00E0 to SW00E7	Temporary error invalid station setting	Stores the setting status of the temporary error invalid station. 0: Other than temporary error invalid station 1: Temporary error invalid station b15 b14 b13 b12 b11 b10 b9 b8 b7 b6 b5 b4 b3 b2 b1 b0 SW00E0: 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 SW00E1: 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 SW00E2: 48 47 46 45 44 43 42 41 40 39 38 37 36 35 34 33 SW00E3: 64 63 62 61 60 59 58 57 56 55 54 53 52 51 50 49 SW00E4: 80 79 78 77 76 75 74 73 72 71 70 69 68 67 66 65 SW00E5: 96 95 94 93 92 91 90 89 88 87 86 85 84 83 82 81 SW00E6: 112 111 110 109 108 107 106 105 104 103 102 101 100 99 98 97 SW00E7: — — — — — — — — 120 119 118 117 116 115 114 113 Each number in the table represents a station No. — is fixed to 0. (Conditions) • This is enabled when the Baton pass status (own station) (SB0047) is OFF. • Holds the data immediately before the error. • This is enabled only for normal stations in the Baton pass status (each station) (SW00A0 to SW00A7). • Reserved stations and stations higher than the maximum station number are ignored.	○	○

<table>
<tr><th rowspan="2">Number</th><th rowspan="2">Name</th><th rowspan="2">Description</th><th colspan="2">Availability</th></tr>
<tr><th>Master station</th><th>Local station</th></tr>
<tr><td>SW00F0 to SW00F7</td><td>CPU RUN status (each station)</td><td>Stores the RUN status of each station.
0: RUN, STEP-RUN
1: STOP, PAUSE, stop error

<table><tr><th></th><th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>b11</th><th>b10</th><th>b9</th><th>b8</th><th>b7</th><th>b6</th><th>b5</th><th>b4</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th></tr><tr><td>SW00F0</td><td>16</td><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>9</td><td>8</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td></tr><tr><td>SW00F1</td><td>32</td><td>31</td><td>30</td><td>29</td><td>28</td><td>27</td><td>26</td><td>25</td><td>24</td><td>23</td><td>22</td><td>21</td><td>20</td><td>19</td><td>18</td><td>17</td></tr><tr><td>SW00F2</td><td>48</td><td>47</td><td>46</td><td>45</td><td>44</td><td>43</td><td>42</td><td>41</td><td>40</td><td>39</td><td>38</td><td>37</td><td>36</td><td>35</td><td>34</td><td>33</td></tr><tr><td>SW00F3</td><td>64</td><td>63</td><td>62</td><td>61</td><td>60</td><td>59</td><td>58</td><td>57</td><td>56</td><td>55</td><td>54</td><td>53</td><td>52</td><td>51</td><td>50</td><td>49</td></tr><tr><td>SW00F4</td><td>80</td><td>79</td><td>78</td><td>77</td><td>76</td><td>75</td><td>74</td><td>73</td><td>72</td><td>71</td><td>70</td><td>69</td><td>68</td><td>67</td><td>66</td><td>65</td></tr><tr><td>SW00F5</td><td>96</td><td>95</td><td>94</td><td>93</td><td>92</td><td>91</td><td>90</td><td>89</td><td>88</td><td>87</td><td>86</td><td>85</td><td>84</td><td>83</td><td>82</td><td>81</td></tr><tr><td>SW00F6</td><td>112</td><td>111</td><td>110</td><td>109</td><td>108</td><td>107</td><td>106</td><td>105</td><td>104</td><td>103</td><td>102</td><td>101</td><td>100</td><td>99</td><td>98</td><td>97</td></tr><tr><td>SW00F7</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>120</td><td>119</td><td>118</td><td>117</td><td>116</td><td>115</td><td>114</td><td>113</td></tr></table>Each number in the table represents a station No.
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(Conditions)
• This is enabled when the Baton pass status (own station) (SB0047) is OFF.
• Holds the data immediately before the error.
• This is enabled only for normal stations in the Baton pass status (each station) (SW00A0 to SW00A7).
• Reserved stations and stations higher than the maximum station number are ignored.</td><td>○</td><td>○</td></tr>
<tr><td>SW0100 to SW0107</td><td>CPU operation status (each station) (1)</td><td>Stores the stop error status for each station.
0: Normal
1: Stop error

<table><tr><th></th><th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>b11</th><th>b10</th><th>b9</th><th>b8</th><th>b7</th><th>b6</th><th>b5</th><th>b4</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th></tr><tr><td>SW0100</td><td>16</td><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>9</td><td>8</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td></tr><tr><td>SW0101</td><td>32</td><td>31</td><td>30</td><td>29</td><td>28</td><td>27</td><td>26</td><td>25</td><td>24</td><td>23</td><td>22</td><td>21</td><td>20</td><td>19</td><td>18</td><td>17</td></tr><tr><td>SW0102</td><td>48</td><td>47</td><td>46</td><td>45</td><td>44</td><td>43</td><td>42</td><td>41</td><td>40</td><td>39</td><td>38</td><td>37</td><td>36</td><td>35</td><td>34</td><td>33</td></tr><tr><td>SW0103</td><td>64</td><td>63</td><td>62</td><td>61</td><td>60</td><td>59</td><td>58</td><td>57</td><td>56</td><td>55</td><td>54</td><td>53</td><td>52</td><td>51</td><td>50</td><td>49</td></tr><tr><td>SW0104</td><td>80</td><td>79</td><td>78</td><td>77</td><td>76</td><td>75</td><td>74</td><td>73</td><td>72</td><td>71</td><td>70</td><td>69</td><td>68</td><td>67</td><td>66</td><td>65</td></tr><tr><td>SW0105</td><td>96</td><td>95</td><td>94</td><td>93</td><td>92</td><td>91</td><td>90</td><td>89</td><td>88</td><td>87</td><td>86</td><td>85</td><td>84</td><td>83</td><td>82</td><td>81</td></tr><tr><td>SW0106</td><td>112</td><td>111</td><td>110</td><td>109</td><td>108</td><td>107</td><td>106</td><td>105</td><td>104</td><td>103</td><td>102</td><td>101</td><td>100</td><td>99</td><td>98</td><td>97</td></tr><tr><td>SW0107</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>120</td><td>119</td><td>118</td><td>117</td><td>116</td><td>115</td><td>114</td><td>113</td></tr></table>Each number in the table represents a station No.
— is fixed to 0.

(Conditions)
• This is enabled when the Baton pass status (own station) (SB0047) is OFF.
• Holds the data immediately before the error.
• This is enabled only for normal stations in the Baton pass status (each station) (SW00A0 to SW00A7).
• Reserved stations and stations higher than the maximum station number are ignored.</td><td>○</td><td>○</td></tr>
</table>

<table>
<tr><th rowspan="2">Number</th><th rowspan="2">Name</th><th rowspan="2">Description</th><th colspan="2">Availability</th></tr>
<tr><th>Master station</th><th>Local station</th></tr>
<tr><td>SW0110
to
SW0117</td><td>CPU operation status (each station) (2)</td><td>Stores the continuation error status for each station.
0: Normal
1: Continuation error

<table>
<tr><th></th><th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>b11</th><th>b10</th><th>b9</th><th>b8</th><th>b7</th><th>b6</th><th>b5</th><th>b4</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th></tr>
<tr><td>SW0110</td><td>16</td><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>9</td><td>8</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td></tr>
<tr><td>SW0111</td><td>32</td><td>31</td><td>30</td><td>29</td><td>28</td><td>27</td><td>26</td><td>25</td><td>24</td><td>23</td><td>22</td><td>21</td><td>20</td><td>19</td><td>18</td><td>17</td></tr>
<tr><td>SW0112</td><td>48</td><td>47</td><td>46</td><td>45</td><td>44</td><td>43</td><td>42</td><td>41</td><td>40</td><td>39</td><td>38</td><td>37</td><td>36</td><td>35</td><td>34</td><td>33</td></tr>
<tr><td>SW0113</td><td>64</td><td>63</td><td>62</td><td>61</td><td>60</td><td>59</td><td>58</td><td>57</td><td>56</td><td>55</td><td>54</td><td>53</td><td>52</td><td>51</td><td>50</td><td>49</td></tr>
<tr><td>SW0114</td><td>80</td><td>79</td><td>78</td><td>77</td><td>76</td><td>75</td><td>74</td><td>73</td><td>72</td><td>71</td><td>70</td><td>69</td><td>68</td><td>67</td><td>66</td><td>65</td></tr>
<tr><td>SW0115</td><td>96</td><td>95</td><td>94</td><td>93</td><td>92</td><td>91</td><td>90</td><td>89</td><td>88</td><td>87</td><td>86</td><td>85</td><td>84</td><td>83</td><td>82</td><td>81</td></tr>
<tr><td>SW0116</td><td>112</td><td>111</td><td>110</td><td>109</td><td>108</td><td>107</td><td>106</td><td>105</td><td>104</td><td>103</td><td>102</td><td>101</td><td>100</td><td>99</td><td>98</td><td>97</td></tr>
<tr><td>SW0117</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>120</td><td>119</td><td>118</td><td>117</td><td>116</td><td>115</td><td>114</td><td>113</td></tr>
</table>
Each number in the table represents a station No.
— is fixed to 0.

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• This is enabled when the Baton pass status (own station) (SB0047) is OFF.
• Holds the data immediately before the error.
• This is enabled only for normal stations in the Baton pass status (each station) (SW00A0 to SW00A7).
• Reserved stations and stations higher than the maximum station number are ignored.</td><td>○</td><td>○</td></tr>
<tr><td>SW0120
to
SW0127</td><td>PORT1 error frame reception status (each station)</td><td>Stores if an error frame is received on the transmission path at each station's PORT1.
0: A line error has not yet occurred on the transmission path of the each station's PORT1.
1: A line error has occurred on the transmission path of the each station's PORT1.

When Clear communication error count (SB0006) is turned ON, the stored status is cleared.

<table>
<tr><th></th><th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>b11</th><th>b10</th><th>b9</th><th>b8</th><th>b7</th><th>b6</th><th>b5</th><th>b4</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th></tr>
<tr><td>SW0120</td><td>16</td><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>9</td><td>8</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td></tr>
<tr><td>SW0121</td><td>32</td><td>31</td><td>30</td><td>29</td><td>28</td><td>27</td><td>26</td><td>25</td><td>24</td><td>23</td><td>22</td><td>21</td><td>20</td><td>19</td><td>18</td><td>17</td></tr>
<tr><td>SW0122</td><td>48</td><td>47</td><td>46</td><td>45</td><td>44</td><td>43</td><td>42</td><td>41</td><td>40</td><td>39</td><td>38</td><td>37</td><td>36</td><td>35</td><td>34</td><td>33</td></tr>
<tr><td>SW0123</td><td>64</td><td>63</td><td>62</td><td>61</td><td>60</td><td>59</td><td>58</td><td>57</td><td>56</td><td>55</td><td>54</td><td>53</td><td>52</td><td>51</td><td>50</td><td>49</td></tr>
<tr><td>SW0124</td><td>80</td><td>79</td><td>78</td><td>77</td><td>76</td><td>75</td><td>74</td><td>73</td><td>72</td><td>71</td><td>70</td><td>69</td><td>68</td><td>67</td><td>66</td><td>65</td></tr>
<tr><td>SW0125</td><td>96</td><td>95</td><td>94</td><td>93</td><td>92</td><td>91</td><td>90</td><td>89</td><td>88</td><td>87</td><td>86</td><td>85</td><td>84</td><td>83</td><td>82</td><td>81</td></tr>
<tr><td>SW0126</td><td>112</td><td>111</td><td>110</td><td>109</td><td>108</td><td>107</td><td>106</td><td>105</td><td>104</td><td>103</td><td>102</td><td>101</td><td>100</td><td>99</td><td>98</td><td>97</td></tr>
<tr><td>SW0127</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>120</td><td>119</td><td>118</td><td>117</td><td>116</td><td>115</td><td>114</td><td>113</td></tr>
</table>
Each number in the table represents a station No.
— is fixed to 0.

(Conditions)
• This is enabled when the Baton pass status (own station) (SB0047) is OFF.
• Holds the data immediately before the error.
• This is enabled only for normal stations in the Baton pass status (each station) (SW00A0 to SW00A7).</td><td>○</td><td>○</td></tr>
</table>

<table>
<tr><th rowspan="2">Number</th><th rowspan="2">Name</th><th rowspan="2">Description</th><th colspan="2">Availability</th></tr>
<tr><th>Master station</th><th>Local station</th></tr>
<tr><td>SW0130
to
SW0137</td><td>PORT2 error frame reception status (each station)</td><td>Stores if an error frame is received on the transmission path at each station's PORT2.
0: A line error has not yet occurred on the transmission path of the each station's PORT2.
1: A line error has occurred on the transmission path of the each station's PORT2.

When Clear communication error count (SB0006) is turned ON, the stored status is cleared.

<table>
<tr><th></th><th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>b11</th><th>b10</th><th>b9</th><th>b8</th><th>b7</th><th>b6</th><th>b5</th><th>b4</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th></tr>
<tr><td>SW0130</td><td>16</td><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>9</td><td>8</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td></tr>
<tr><td>SW0131</td><td>32</td><td>31</td><td>30</td><td>29</td><td>28</td><td>27</td><td>26</td><td>25</td><td>24</td><td>23</td><td>22</td><td>21</td><td>20</td><td>19</td><td>18</td><td>17</td></tr>
<tr><td>SW0132</td><td>48</td><td>47</td><td>46</td><td>45</td><td>44</td><td>43</td><td>42</td><td>41</td><td>40</td><td>39</td><td>38</td><td>37</td><td>36</td><td>35</td><td>34</td><td>33</td></tr>
<tr><td>SW0133</td><td>64</td><td>63</td><td>62</td><td>61</td><td>60</td><td>59</td><td>58</td><td>57</td><td>56</td><td>55</td><td>54</td><td>53</td><td>52</td><td>51</td><td>50</td><td>49</td></tr>
<tr><td>SW0134</td><td>80</td><td>79</td><td>78</td><td>77</td><td>76</td><td>75</td><td>74</td><td>73</td><td>72</td><td>71</td><td>70</td><td>69</td><td>68</td><td>67</td><td>66</td><td>65</td></tr>
<tr><td>SW0135</td><td>96</td><td>95</td><td>94</td><td>93</td><td>92</td><td>91</td><td>90</td><td>89</td><td>88</td><td>87</td><td>86</td><td>85</td><td>84</td><td>83</td><td>82</td><td>81</td></tr>
<tr><td>SW0136</td><td>112</td><td>111</td><td>110</td><td>109</td><td>108</td><td>107</td><td>106</td><td>105</td><td>104</td><td>103</td><td>102</td><td>101</td><td>100</td><td>99</td><td>98</td><td>97</td></tr>
<tr><td>SW0137</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>120</td><td>119</td><td>118</td><td>117</td><td>116</td><td>115</td><td>114</td><td>113</td></tr>
</table>
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— is fixed to 0.

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• This is enabled only for normal stations in the Baton pass status (each station) (SW00A0 to SW00A7).</td><td>○</td><td>○</td></tr>
<tr><td>SW0140
to
SW0147</td><td>PORT1 error frame detection (each station)</td><td>Stores if an error frame was received from power-on until the present on the transmission path at each station's PORT1.
0: A line error is not currently occurred on the transmission path of the each station's PORT1.
1: A line error is currently occurred on the transmission path of the each station's PORT1.

When Clear communication error count (SB0006) is turned ON, the stored status is cleared.

<table>
<tr><th></th><th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>b11</th><th>b10</th><th>b9</th><th>b8</th><th>b7</th><th>b6</th><th>b5</th><th>b4</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th></tr>
<tr><td>SW0140</td><td>16</td><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>9</td><td>8</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td></tr>
<tr><td>SW0141</td><td>32</td><td>31</td><td>30</td><td>29</td><td>28</td><td>27</td><td>26</td><td>25</td><td>24</td><td>23</td><td>22</td><td>21</td><td>20</td><td>19</td><td>18</td><td>17</td></tr>
<tr><td>SW0142</td><td>48</td><td>47</td><td>46</td><td>45</td><td>44</td><td>43</td><td>42</td><td>41</td><td>40</td><td>39</td><td>38</td><td>37</td><td>36</td><td>35</td><td>34</td><td>33</td></tr>
<tr><td>SW0143</td><td>64</td><td>63</td><td>62</td><td>61</td><td>60</td><td>59</td><td>58</td><td>57</td><td>56</td><td>55</td><td>54</td><td>53</td><td>52</td><td>51</td><td>50</td><td>49</td></tr>
<tr><td>SW0144</td><td>80</td><td>79</td><td>78</td><td>77</td><td>76</td><td>75</td><td>74</td><td>73</td><td>72</td><td>71</td><td>70</td><td>69</td><td>68</td><td>67</td><td>66</td><td>65</td></tr>
<tr><td>SW0145</td><td>96</td><td>95</td><td>94</td><td>93</td><td>92</td><td>91</td><td>90</td><td>89</td><td>88</td><td>87</td><td>86</td><td>85</td><td>84</td><td>83</td><td>82</td><td>81</td></tr>
<tr><td>SW0146</td><td>112</td><td>111</td><td>110</td><td>109</td><td>108</td><td>107</td><td>106</td><td>105</td><td>104</td><td>103</td><td>102</td><td>101</td><td>100</td><td>99</td><td>98</td><td>97</td></tr>
<tr><td>SW0147</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>120</td><td>119</td><td>118</td><td>117</td><td>116</td><td>115</td><td>114</td><td>113</td></tr>
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• Holds the data immediately before the error.
• This is enabled only for normal stations in the Baton pass status (each station) (SW00A0 to SW00A7).</td><td>○</td><td>○</td></tr>
</table>

<table>
<tr><th rowspan="2">Number</th><th rowspan="2">Name</th><th rowspan="2">Description</th><th colspan="2">Availability</th></tr>
<tr><th>Master station</th><th>Local station</th></tr>
<tr><td>SW0150
to
SW0157</td><td>PORT2 error frame detection (each station)</td><td>Stores if an error frame was received from power-on until the present on the transmission path at each station's PORT2.
0: A line error is not currently occurred on the transmission path of the each station's PORT2.
1: A line error is currently occurred on the transmission path of the each station's PORT2.

When Clear communication error count (SB0006) is turned ON, the stored status is cleared.

<table>
<tr><th></th><th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>b11</th><th>b10</th><th>b9</th><th>b8</th><th>b7</th><th>b6</th><th>b5</th><th>b4</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th></tr>
<tr><td>SW0150</td><td>16</td><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>9</td><td>8</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td></tr>
<tr><td>SW0151</td><td>32</td><td>31</td><td>30</td><td>29</td><td>28</td><td>27</td><td>26</td><td>25</td><td>24</td><td>23</td><td>22</td><td>21</td><td>20</td><td>19</td><td>18</td><td>17</td></tr>
<tr><td>SW0152</td><td>48</td><td>47</td><td>46</td><td>45</td><td>44</td><td>43</td><td>42</td><td>41</td><td>40</td><td>39</td><td>38</td><td>37</td><td>36</td><td>35</td><td>34</td><td>33</td></tr>
<tr><td>SW0153</td><td>64</td><td>63</td><td>62</td><td>61</td><td>60</td><td>59</td><td>58</td><td>57</td><td>56</td><td>55</td><td>54</td><td>53</td><td>52</td><td>51</td><td>50</td><td>49</td></tr>
<tr><td>SW0154</td><td>80</td><td>79</td><td>78</td><td>77</td><td>76</td><td>75</td><td>74</td><td>73</td><td>72</td><td>71</td><td>70</td><td>69</td><td>68</td><td>67</td><td>66</td><td>65</td></tr>
<tr><td>SW0155</td><td>96</td><td>95</td><td>94</td><td>93</td><td>92</td><td>91</td><td>90</td><td>89</td><td>88</td><td>87</td><td>86</td><td>85</td><td>84</td><td>83</td><td>82</td><td>81</td></tr>
<tr><td>SW0156</td><td>112</td><td>111</td><td>110</td><td>109</td><td>108</td><td>107</td><td>106</td><td>105</td><td>104</td><td>103</td><td>102</td><td>101</td><td>100</td><td>99</td><td>98</td><td>97</td></tr>
<tr><td>SW0157</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>120</td><td>119</td><td>118</td><td>117</td><td>116</td><td>115</td><td>114</td><td>113</td></tr>
</table>
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— is fixed to 0.

(Conditions)
• This is enabled when the Baton pass status (own station) (SB0047) is OFF.
• Holds the data immediately before the error.
• This is enabled only for normal stations in the Baton pass status (each station) (SW00A0 to SW00A7).</td><td>○</td><td>○</td></tr>
<tr><td>SW0170
to
SW0177</td><td>Parameter error status (each station)</td><td>Stores the parameter status for each station.
0: No parameter error
1: Parameter error found

<table>
<tr><th></th><th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>b11</th><th>b10</th><th>b9</th><th>b8</th><th>b7</th><th>b6</th><th>b5</th><th>b4</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th></tr>
<tr><td>SW0170</td><td>16</td><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>9</td><td>8</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td></tr>
<tr><td>SW0171</td><td>32</td><td>31</td><td>30</td><td>29</td><td>28</td><td>27</td><td>26</td><td>25</td><td>24</td><td>23</td><td>22</td><td>21</td><td>20</td><td>19</td><td>18</td><td>17</td></tr>
<tr><td>SW0172</td><td>48</td><td>47</td><td>46</td><td>45</td><td>44</td><td>43</td><td>42</td><td>41</td><td>40</td><td>39</td><td>38</td><td>37</td><td>36</td><td>35</td><td>34</td><td>33</td></tr>
<tr><td>SW0173</td><td>64</td><td>63</td><td>62</td><td>61</td><td>60</td><td>59</td><td>58</td><td>57</td><td>56</td><td>55</td><td>54</td><td>53</td><td>52</td><td>51</td><td>50</td><td>49</td></tr>
<tr><td>SW0174</td><td>80</td><td>79</td><td>78</td><td>77</td><td>76</td><td>75</td><td>74</td><td>73</td><td>72</td><td>71</td><td>70</td><td>69</td><td>68</td><td>67</td><td>66</td><td>65</td></tr>
<tr><td>SW0175</td><td>96</td><td>95</td><td>94</td><td>93</td><td>92</td><td>91</td><td>90</td><td>89</td><td>88</td><td>87</td><td>86</td><td>85</td><td>84</td><td>83</td><td>82</td><td>81</td></tr>
<tr><td>SW0176</td><td>112</td><td>111</td><td>110</td><td>109</td><td>108</td><td>107</td><td>106</td><td>105</td><td>104</td><td>103</td><td>102</td><td>101</td><td>100</td><td>99</td><td>98</td><td>97</td></tr>
<tr><td>SW0177</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>120</td><td>119</td><td>118</td><td>117</td><td>116</td><td>115</td><td>114</td><td>113</td></tr>
</table>
Each number in the table represents a station No.
— is fixed to 0.

(Conditions)
• This is enabled when the Baton pass status (own station) (SB0047) is OFF.
• Holds the data immediately before the error.
• This is enabled only for normal stations in the Baton pass status (each station) (SW00A0 to SW00A7).
• Reserved stations and stations higher than the maximum station number are ignored.</td><td>○</td><td>○</td></tr>
</table>

<table>
<tr><th rowspan="2">Number</th><th rowspan="2">Name</th><th rowspan="2">Description</th><th colspan="2">Availability</th></tr>
<tr><th>Master station</th><th>Local station</th></tr>
<tr><td>SW0180
to
SW0187</td><td>Reserved station function disable status</td><td>Stores the station that is currently in reserved station function disable status.
0: No reserved station function disable is specified
1: Reserved station function disable in progress

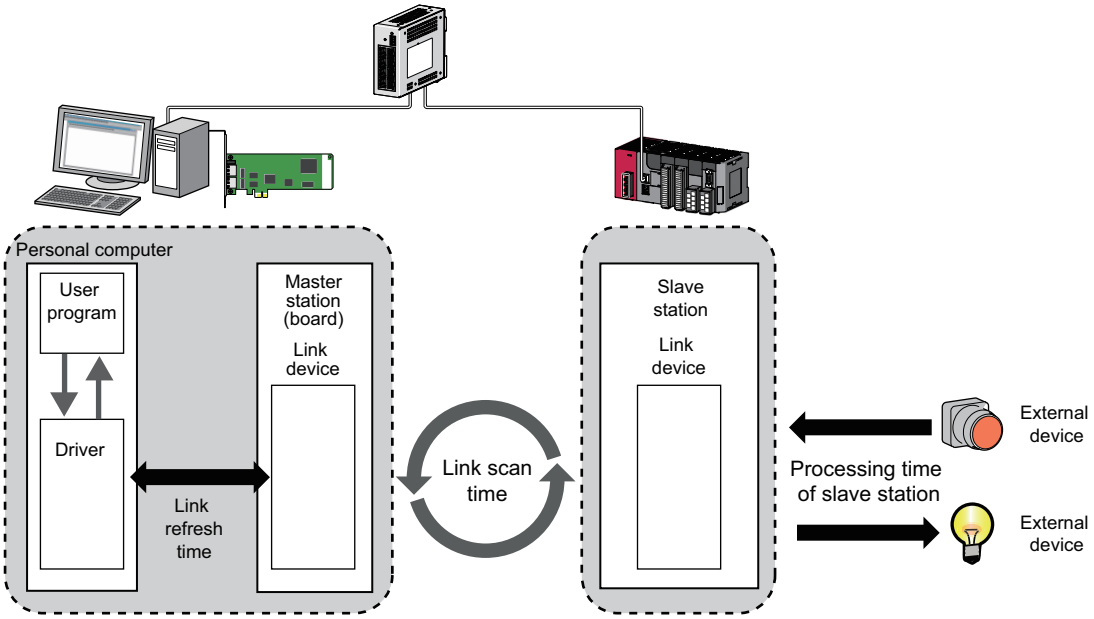
<table>
<tr><th></th><th>b15</th><th>b14</th><th>b13</th><th>b12</th><th>b11</th><th>b10</th><th>b9</th><th>b8</th><th>b7</th><th>b6</th><th>b5</th><th>b4</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th></tr>
<tr><td>SW0180</td><td>16</td><td>15</td><td>14</td><td>13</td><td>12</td><td>11</td><td>10</td><td>9</td><td>8</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td></tr>
<tr><td>SW0181</td><td>32</td><td>31</td><td>30</td><td>29</td><td>28</td><td>27</td><td>26</td><td>25</td><td>24</td><td>23</td><td>22</td><td>21</td><td>20</td><td>19</td><td>18</td><td>17</td></tr>
<tr><td>SW0182</td><td>48</td><td>47</td><td>46</td><td>45</td><td>44</td><td>43</td><td>42</td><td>41</td><td>40</td><td>39</td><td>38</td><td>37</td><td>36</td><td>35</td><td>34</td><td>33</td></tr>
<tr><td>SW0183</td><td>64</td><td>63</td><td>62</td><td>61</td><td>60</td><td>59</td><td>58</td><td>57</td><td>56</td><td>55</td><td>54</td><td>53</td><td>52</td><td>51</td><td>50</td><td>49</td></tr>
<tr><td>SW0184</td><td>80</td><td>79</td><td>78</td><td>77</td><td>76</td><td>75</td><td>74</td><td>73</td><td>72</td><td>71</td><td>70</td><td>69</td><td>68</td><td>67</td><td>66</td><td>65</td></tr>
<tr><td>SW0185</td><td>96</td><td>95</td><td>94</td><td>93</td><td>92</td><td>91</td><td>90</td><td>89</td><td>88</td><td>87</td><td>86</td><td>85</td><td>84</td><td>83</td><td>82</td><td>81</td></tr>
<tr><td>SW0186</td><td>112</td><td>111</td><td>110</td><td>109</td><td>108</td><td>107</td><td>106</td><td>105</td><td>104</td><td>103</td><td>102</td><td>101</td><td>100</td><td>99</td><td>98</td><td>97</td></tr>
<tr><td>SW0187</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>120</td><td>119</td><td>118</td><td>117</td><td>116</td><td>115</td><td>114</td><td>113</td></tr>
</table>
Each number in the table represents a station No.
— is fixed to 0.

(Conditions)
• This is enabled when the Baton pass status (own station) (SB0047) is OFF.
• Holds the data immediately before the error.
• This is enabled only for normal stations in the Baton pass status (each station) (SW00A0 to SW00A7).
• Stations higher than the maximum station number are ignored.</td><td>○</td><td>○</td></tr>
</table>

Appendix 5 Processing Time

The processing time of the CC-Link IE Field Network consists of the time components below.

Sequence scan + Link refresh time + Link scan time + Slave station processing time = Transmission delay time



- Link refresh time: Page 254, Appendix 5.1
- Link scan time: Page 254, Appendix 5.2
- Slave station processing time: Manual for the slave station used
- Transmission delay time: Page 255, Appendix 5.3

Appendix 5.1 Link refresh time

The following is a calculation formula for the link refresh time.

Number of boards that can be installed x 1 [ms]

< For Intel® Core™2 Duo processor 1.8GHz >

With a single board installed, the link refresh time of maximum link device points (36k bytes) is less than 1ms.

Point

- Affection by other driver processing and Windows® kernel processing

  The execution of the link refresh processing may be delayed by the interruption of other driver processing or Windows® kernel processing.

Appendix 5.2 Link scan time

The following is a calculation formula for the link refresh time. (when the link scan mode is asynchronous)

$$LS = \left[\left(\frac{\text{RX points} + \text{RY points}}{8} + (\text{RWr points} + \text{RWw points}) \times 2 \right) \times 0.08 + (\text{Number of connected slave stations} \times Ka) + Kb + Kc + Kd \right] \div 1000 + (\text{Number of event conditions in Event Setting}) \times 0.02 \ [\text{ms}]$$

Item	Cyclic transmission mode	
	Normal mode	High speed mode
Ka	25.8	Conditions: When "Turn OFF or 0 Clear Input Data(RX/RY)" is set in the Network Operation Setting — Value: 18.5 Conditions: When "Hold input Data (RX/RY)" is set in the Network Operation Setting — Value: 9.75
Kb	655	168
Kc (Maximum transient processing time)	160 + 60 × Total number of slave stations set in the parameters	80
Kd (Maximum data link processing time when disconnecting from network or reconnecting to network)	9000 + Total number of ports used in the switching hub × 3000	

Appendix 5.3 Transmission delay time

The following are the calculation formulas for the transmission delay time.

(1) Master station (RX) ← Slave station (input)

The following table shows the time after a signal is input to the slave station until the board device of the master station turns ON or OFF.

Calculation value	calculation formulas
Normal value	SM × 0.5 + LS × 1 + slave station response time [ms]
Maximum value	SM × 1 + LS × 2 + slave station response time [ms]

SM: Master station link refresh time

LS : Link scan time

(2) Master station (RY) → Slave station (output)

The following table shows the time after the board device is turned ON or OFF until the output of the slave station is turned ON or OFF.

Calculation value	calculation formulas
Normal value	SM + LS × 1 + slave station response time [ms]
Maximum value	SM + LS × 2 + slave station response time [ms]

SM: Master station link refresh time

LS : Link scan time

Appendix 6 Differences in Cyclic Transmission Modes

This section explains the differences between "Online (Normal Mode)" and "Online (High Speed Mode)" for the CC-Link IE Field Network board. Refer to the information in this section to select "Online (Normal Mode)" and "Online (High Speed Mode)".

(1) Differences in performance specifications

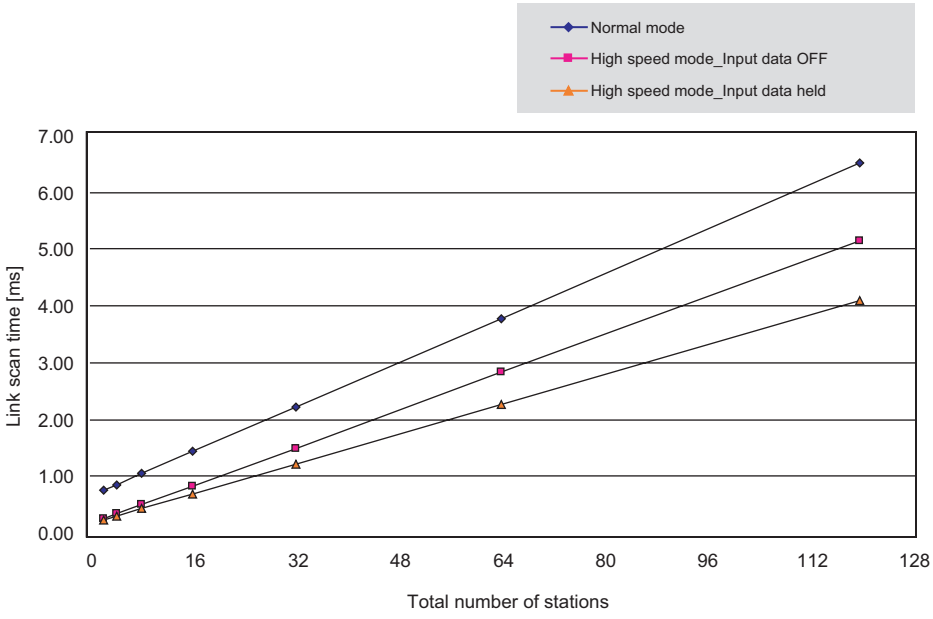
The following items can be selected.

Item	Online (Normal mode)	Online (High speed mode)
Maximum number of RWw send points per local station	1024 points, 2048 bytes	256 points, 512 bytes
Maximum number of transients per link scan	4 + slave stations × 1.5	4

(2) Differences in link scan time

The link scan times in normal mode and high speed mode are shown below when assigning 128 points to RX/RY per station, 64 points to RWw/RWr per station, and the number of connected stations is increased.

Total number of stations	Link scan time (ms)			Total number of points for link devices (bytes)
	Online (Normal mode)	Online (High speed mode)		
		Network Operation Setting: "Turn OFF or 0 Clear Input Data(RX/RY)"	Network Operation Setting: "Hold input Data (RX/RY)"	
2	0.75	0.24	0.23	576
4	0.85	0.33	0.29	1152
8	1.05	0.49	0.42	2304
16	1.44	0.82	0.68	4608
32	2.22	1.49	1.21	9216
64	3.78	2.82	2.26	17280
120	6.52	5.14	4.09	34560



Appendix 7 Comparison of CC-Link and CC-Link IE Field Network

This section explains the differences in the specifications between CC-Link Ver.2 board and CC-Link IE Field Network board.

(1) Performance specifications comparison

(a) Transmission and interface specifications

Item			Specifications	
			CC-Link Ver.2 board	CC-Link IE Field Network board
Maximum link points per network		RWw	2048 points *1	8192 points
		RWr	2048 points *1	8192 points
		RX	8192 points *1	16384 points
		RY	8192 points *1	16384 points
Maximum number of send points per station	Master station	RWw	2048 points *1	8192 points
		RY	8192 points *1	16384 points
	Local station	RWw	128 points *1	Online (Normal mode): 1024 points Online (High speed mode): 256 points
		RY	896 points *1	2048 points
Transmission specifications	Communication speed		Selectable from 156kbps/625kbps/2.5Mbps/5Mbps/10Mbps	1Gbps
	Connection cable		• CC-Link dedicated cable • CC-Link dedicated high-performance cable • Ver.1.10- compatible CC-Link dedicated cable	An Ethernet cable that meets the 1000BASE-T standard: Category 5e or higher (double shielded, STP), straight cable (☞ Page 33, Section 2.4.1)
	Maximum station-to-station distance		30cm to 1200m (varies depending on connected stations and transmission speed)	100m maxi. (Compliant with ANSI/TIA/EIA-568-B (Category 5e)) (☞ Page 56, Section 4.6.2)
	Total distance		1200m (at transmission speed of 156kbps)	Line topology: 12000m (when connected to 1 master station and 120 slave stations) Star topology: Depends on the system configuration Ring topology: 12100m (when connected to 1 master station and 120 slave stations)
	Network topology		Bus topology	Line topology, star topology (Coexistence of line topology and star topology is possible.), ring topology
Number of connected stations in one network	Master station		1 station (up to 64 remote stations can be connected to master station)	1 station (up to 120 slave stations can be connected to master station)
	Local station		26 stations	120 stations
Station type			Master station, local station	
Communication method			Broadcast polling	Token passing method
Number of occupied I/O points			32 points (I/O assignment: Intelligent 32 points)	

*1 : These are values in remote net ver.2 mode or remote net additional mode.

(b) Hardware specifications

Item	Specifications				
	CC-Link Ver.2 board		CC-Link IE Field Network board		
	Q80BD-J61BT11N	Q81BD-J61BT11	Q80BD-J71GF11-T2	Q81BD-J71GF11-T2	
Internal current consumption	0.56A (5VDC)	1.06A (3.3VDC)	1.10A (5VDC)	1.68A (3.3VDC)	
Installation slot	PCI slot	PCI Express slot	PCI bus slot, PCI-X slot	PCI Express slot	
				Standard	Low profile
External dimensions	121(H) × 19(W) × 153(D) [mm]		121(H) × 18.5(W) × 181(D) [mm]	121(H) × 18.5(W) × 181(D) [mm]	80(H) × 18.5(W) × 181(D) [mm]
Weight	0.11kg		0.11kg	0.08kg	0.07kg

(2) Functional comparison

(a) Added functions

The following are the functions added in the CC-Link IE Field Network.

Function		Description	Refer to
Cyclic transmission	Mode selection for cyclic transmission	This mode can be selected for optimizing the performance of cyclic transmission based on the frequencies of cyclic transmission and transient transmission. The mode can be selected from "Online (Normal mode)" and "Online (High-speed mode)".	Page 111, Section 10.2.1 Page 256, Appendix 6
Transient transmission	Seamless transmission with different networks	Setting the routing parameters beforehand also enables transient transmission to stations in different networks. Communication is also possible with the CC-Link IE Controller Network, and MELSECNET/H.	Page 74, Section 5.3.2
CC-Link IE Field Network diagnostics	Network configuration display	The network configuration can be checked by the CC-Link IE Field Network diagnostics of CC-Link IE Field Utility.	Page 144, Section 13.2
	Loop test	Check the network circuit status and parameter setting status of each station.	Page 58, Section 4.7.1
	Cable test	Check the connection status of the Ethernet cable.	Page 60, Section 4.7.2
	Communication test	Check whether the communication path for transient transmission from the own station to the target station is correct.	Page 61, Section 4.7.3
	Network event history	The history of events that occurred in the own station and on the network is displayed. For the master station, the event history of the entire network can be displayed, and so it can be used for troubleshooting at network start-up.	Page 159, Section 13.2.6
Other	Reserved station temporary disablement	Reserved stations can be temporarily disabled without changing parameters.	Page 82, Section 5.5 Page 161, Section 13.2.7

(b) Modified functions

The following are the functions modified in the CC-Link IE Field Network board.

Function	Notes during replacement
Slave station cut-off function	When the CC-Link IE Field Network is connected in a line topology, stations after the disconnected station become data link error stations. To prevent disconnection of normal stations, connect the CC-Link IE Field Network in a star topology. (☞ Page 26, Section 2.2)
Standby master function	No standby master function is available in the CC-Link IE Field Network board.
Data link status setting for error occurrence of CC-Link module master station CPU	The setting is fixed to "Continue" for CC-Link IE Field Network.

Appendix 8 Combinations with Existing Software

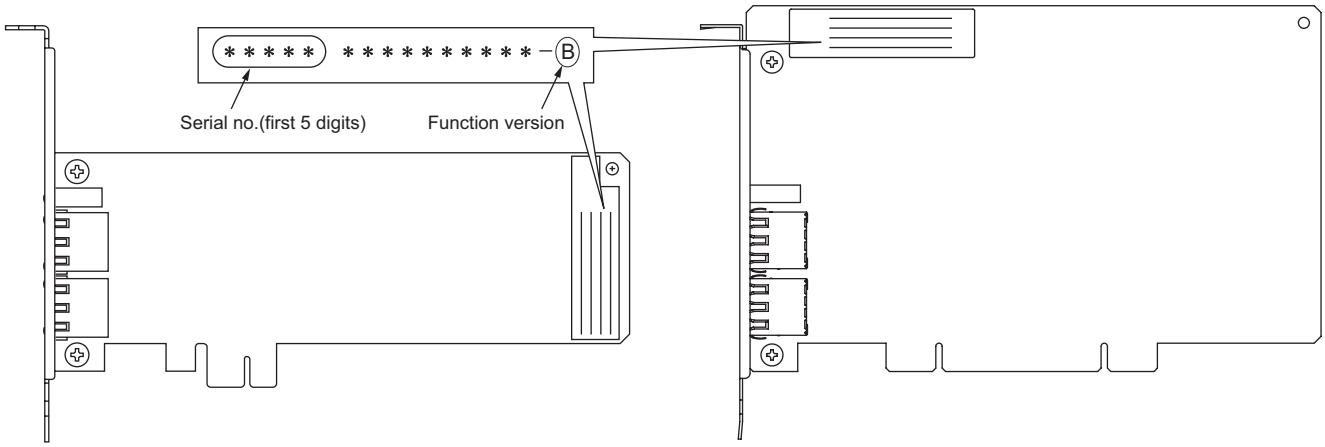
There is no restriction when using CC-Link IE Field Network board with other MELSEC interface boards or MELSOFT products on the same personal computer. For the restrictions of the applicable operating environment or applicable access target, refer to the manual of each product.

Appendix 9 Checking Serial Number and Function Version

This section explains a method for checking a serial number and a function version of CC-Link IE Field Network board.

(1) Checking on the rating plate

A serial number and a function version of CC-Link IE Field Network board can be checked on the rating plate.

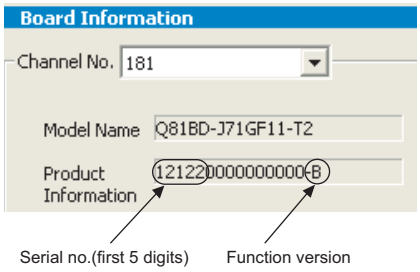


(2) Checking on the CC-Link Field utility

A serial number and a function version can be displayed on the "Board Diagnostics" screen in the CC IE Field Utility.

Screen display

[Diagnostics] ⇨ [Board Diagnostics]



Point

The serial number displayed on the "Board Diagnostics" screen in the CC IE Field Utility may differ from that on the rating plate of the CC-Link IE Field Network board.

- The serial number on the rating plate of the CC-Link IE Field Network board indicates the management information of the product.
- The serial number displayed in the "Board Diagnostics" screen in the CC IE Field Utility indicates the functional information of the product. The functional information of the product is updated when a new function is added.

Appendix 10 New and Improved Functions

Appendix 10.1 Change of hardware function

There is no new and improved functions related to the hardware version.

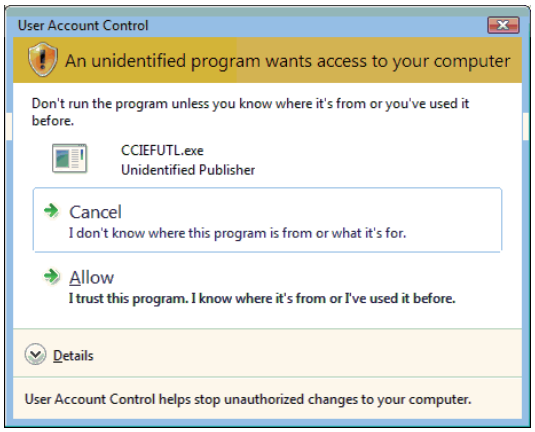
Appendix 10.2 Update of software package

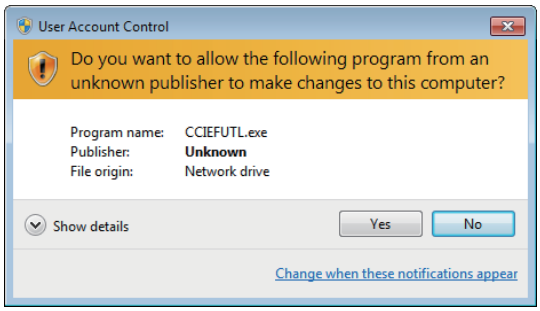
For details of the update version software and the functions which are added or changed, please consult your local Mitsubishi representative.

Appendix 11 Windows® Warning Message

Appendix 11.1 Overview of warning message

When using an operating system with the user account control function, a warning message appears when the utility is activated. (☞ Page 94, Section 8.1)


User Account Control
An unidentified program wants access to your computer
Don't run the program unless you know where it's from or you've used it before.
CCIEFUTL.exe
Unidentified Publisher
Cancel
I don't know where this program is from or what it's for.
Allow
I trust this program. I know where it's from or I've used it before.
Details
User Account Control helps stop unauthorized changes to your computer.


User Account Control
Do you want to allow the following program from an unknown publisher to make changes to this computer?
Program name: CCIEFUTL.exe
Publisher: Unknown
File origin: Network drive
Show details
Yes
No
Change when these notifications appear

Appendix 11.2 Methods for preventing warning message

Point

The user account control (UAC) function prevents a crash (e.g. prevention of start-up of a program which executes unintended operation).
Before setting this function, grasp that the security function offered by UAC will be disabled and fully understand the risk.

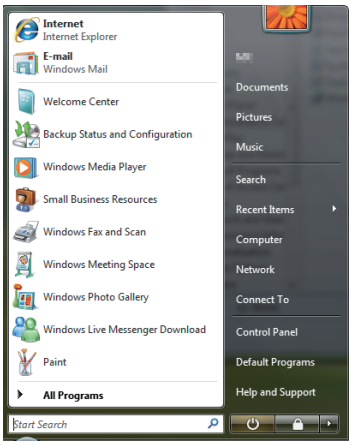
The following two methods are available for preventing a warning message.

(1) Disabling user account control function

The following shows a procedure for disabling the user account control function.

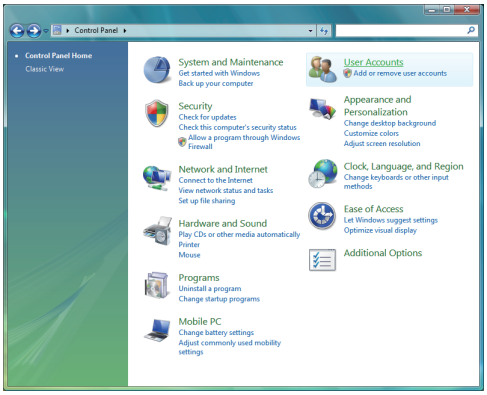
(a) Using Windows Vista® , Windows Server® 2008

1. **Open [Control Panel].**



↓

2. **Select [User Accounts].**



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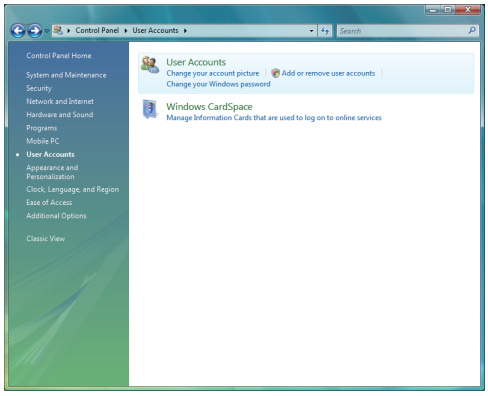
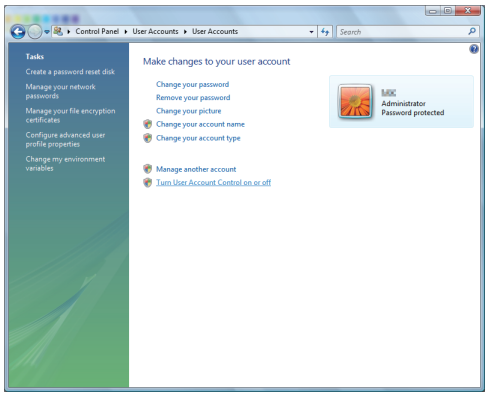


↓



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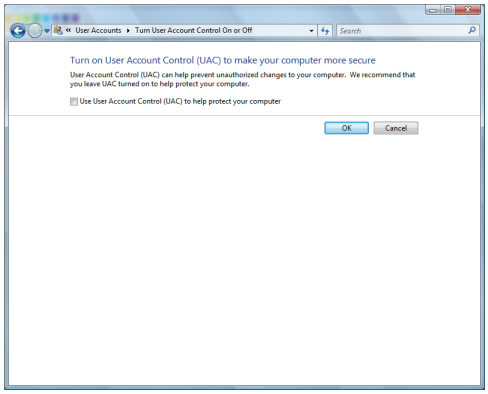

User Accounts ▸ Turn User Account Control On or Off
Search
Turn on User Account Control (UAC) to make your computer more secure
User Account Control (UAC) can help prevent unauthorized changes to your computer. We recommend that you leave UAC turned on to help protect your computer.
Use User Account Control (UAC) to help protect your computer
OK
Cancel

↓

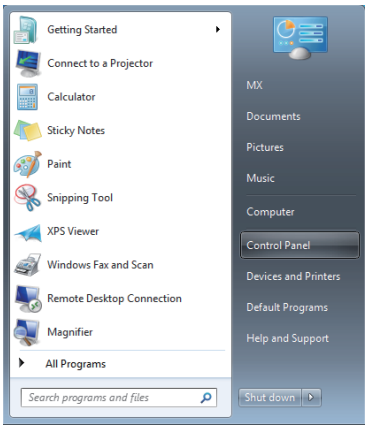
(Setting completed)

3. **Select [User Accounts].**

4. **Select [Turn User Account Control on or off].**

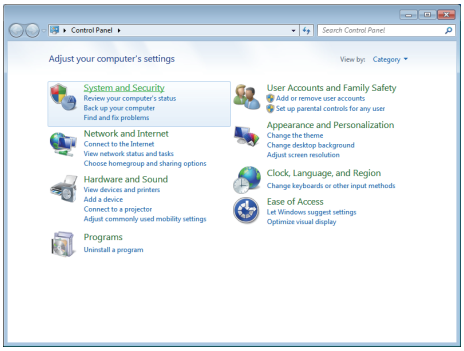
5. **Clear [Use User Account Control (UAC) to help protect your computer] and click the OK button.**

(b) Using Windows® 7, Windows Server® 2008 R2, Windows Server® 20012, Windows® 8



↓

1. **Open [Control Panel].**



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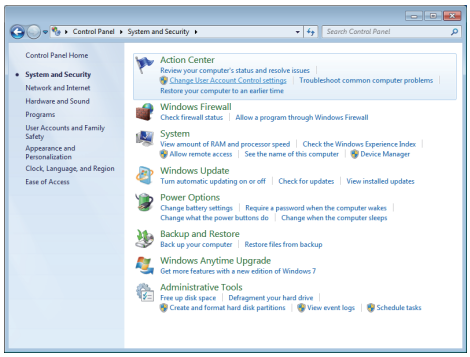
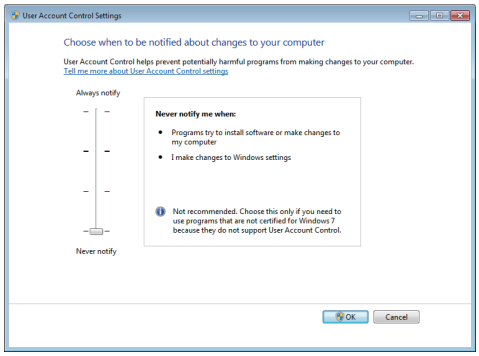
2. **Select [System and Security].**



↓

3. **Select [Change User Account Control settings].**


User Account Control Settings
Choose when to be notified about changes to your computer
User Account Control helps prevent potentially harmful programs from making changes to your computer.
Tell me more about User Account Control settings
Always notify
Never notify me when:
Programs try to install software or make changes to my computer
I make changes to Windows settings
Not recommended. Choose this only if you need to use programs that are not certified for Windows 7 because they do not support User Account Control.
Never notify
OK
Cancel

↓

4. **Set the slide bar "Never notify" and click the**

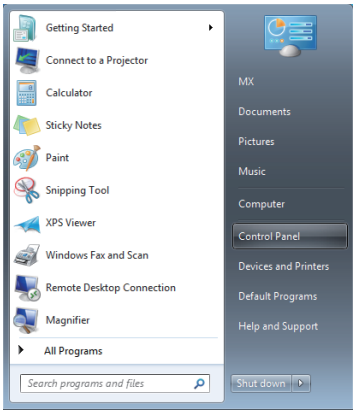
button.

↓

(Setting completed)

(2) Allowing operation without displaying warning message

The following shows a procedure for allowing an operation without displaying a warning message.



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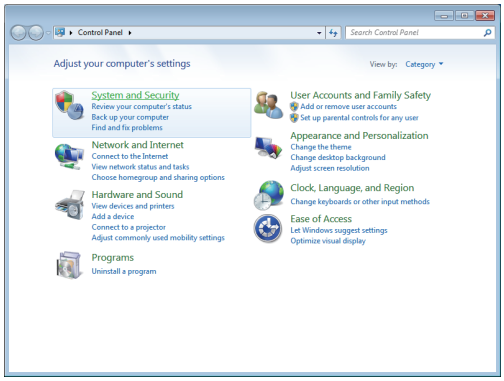
1. **Open [Control Panel].**



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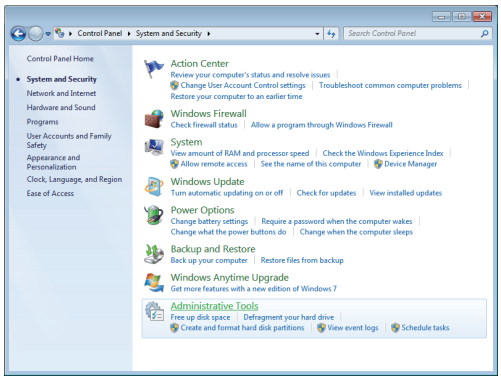
2. **Select [System and Security].**

REMARKS

When using Windows Vista® and Windows Server® 2008 select [Classic View].



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3. **Select [Administrative Tools].**

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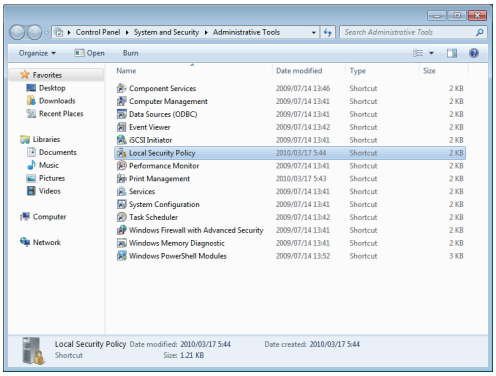
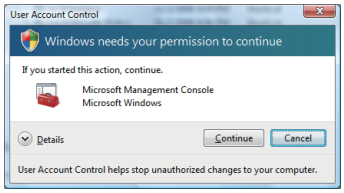
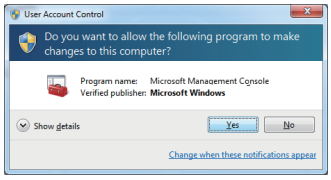


4. **Select [Local Security Policy].**

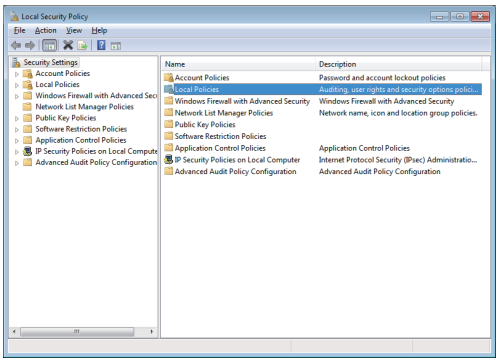
REMARKS

When user account control is enabled, the following screen appears. Click the Continue or Yes button.



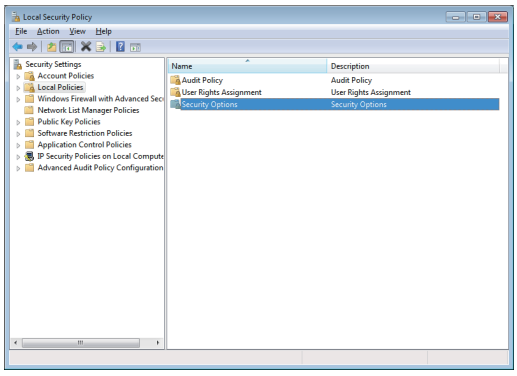

User Account Control
Do you want to allow the following program to make changes to this computer?
Program name: Microsoft Management Console
Verified publisher: Microsoft Windows
Show details
Yes
No
Change when these notifications appear

↓



5. **Select [Local Policies].**

↓



6. **Select [Security Options].**

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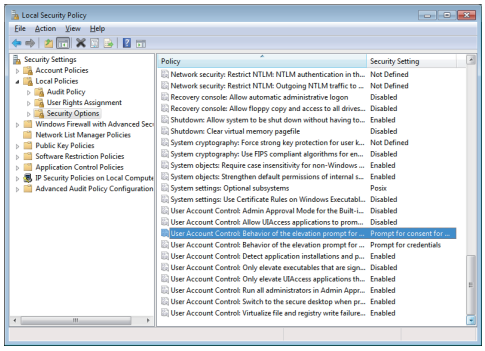

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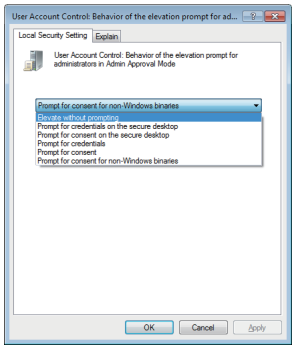


↓

(Setting completed)

7. **Select [User Account Control: Behavior of the elevation prompt for administrators in Admin Approval Mode Prompt for consent].**

8. **Select [Elevate without prompting] on the <<Local Security Setting>> tab, and click the** OK **button.**

Appendix 12 Behavior When Personal Computer Enters Power Save Mode or Fast Startup

CC-Link IE Field Network board does not support the power save mode (standby, hibernate, sleep) and fast startup.
The following explains the behavior of the personal computer when the personal computer enters each mode.

Appendix 12.1 Behavior when the personal computer enters the power save mode (standby, hibernate)

(1) Target operating system

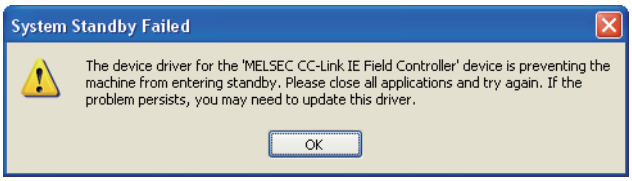
The following operating systems have the power save mode (standby, hibernate).

- Windows XP®
- Windows Server® 2003 R2

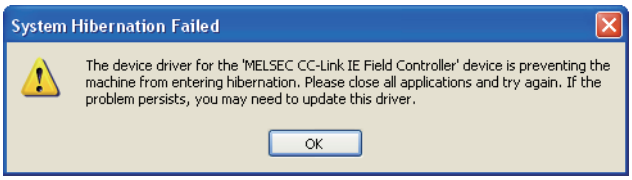
(2) Behavior when entering the standby mode/hibernation mode

When the personal computer enters the power save mode (standby, hibernate), the following message appears and the power save mode (standby, hibernate) is disabled.
The CC-Link IE Field Network board continues its operation and the data link remains normal.

<When entering the standby mode >


System Standby Failed
The device driver for the 'MELSEC CC-Link IE Field Controller' device is preventing the machine from entering standby. Please close all applications and try again. If the problem persists, you may need to update this driver.
OK

<When entering the hibernation mode>


System Hibernation Failed
The device driver for the 'MELSEC CC-Link IE Field Controller' device is preventing the machine from entering hibernation. Please close all applications and try again. If the problem persists, you may need to update this driver.
OK

(3) Corrective action

When the personal computer is set to enter the power save mode (standby, hibernate), check and change the setting for when the computer's power button is pressed, or the settings of the uninterruptible power supply system (UPS) on the control panel.

Appendix 12.2 Behavior when the personal computer enters the power save mode (hibernate, sleep)

(1) Target operating system

The following operating systems have the power save mode (hibernation, sleep)

- Windows Vista®
- Windows Server® 2008
- Windows Server® 2008 R2
- Windows® 7
- Windows Server® 2012
- Windows® 8

(2) Behavior when entering the hibernation mode/sleep mode

The following explains the behavior of the board when the power save mode (hibernate, sleep) is entered on the personal computer.

- The CC-Link IE Field Network board stops its operation and is disconnected from the network.
- The board is not reconnected even after the personal computer returns from the power save mode (hibernate, sleep).
- After the personal computer returns from the power save mode (hibernate, sleep), "-28141(9213H) : System sleep error" occurs when accessing CC-Link IE Field Network board from the CC IE Field utility or an application program, which includes MELSEC data link library function.

(3) Corrective action

When the personal computer is set to enter the power save mode (hibernate, sleep), the setting is changed by MELSECPowerManager.

For details of MELSECPowerManager, refer to the following section.

☞ Page 271, Appendix 13

Appendix 12.3 Behavior when fast startup function is enabled

(1) Target operating system

The following operating systems have the fast startup function.

- Windows Server® 2012
- Windows® 8

(2) Behavior when the fast startup function is enabled

The following explains the behavior of the board when the fast startup function is enabled.

- The board is not reconnected even after the fast startup.
- After the fast startup, "-28141(9213H) : System sleep error" occurs when accessing CC-Link IE Field Network board from the CC IE Field utility or an application program, which includes MELSEC data link library function.

(3) Measurement

When the fast startup function is enabled on the personal computer, the setting is changed by MELSECPowerManager.

For details of MELSECPowerManager, refer to the following section.

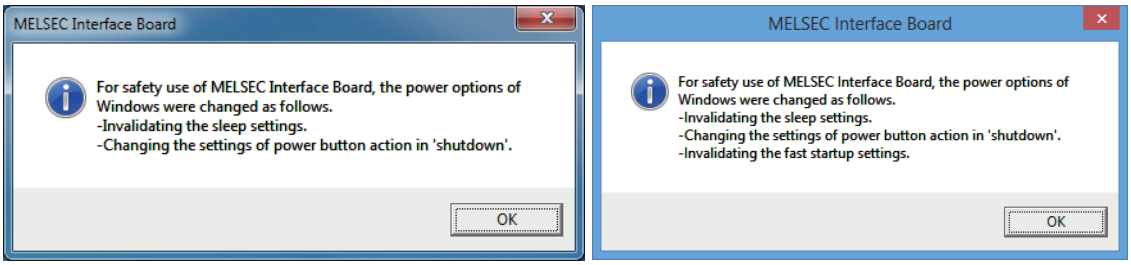
☞ Page 271, Appendix 13

Appendix 13 MELSECPowerManager

MELSECPowerManager is a service application which monitors the Windows® Power Options settings every 30 seconds to prevent the personal computer from entering the power save mode (hibernate, sleep) or the fast startup function.
MELSECPowerManager is applicable for the following operating systems.

- Windows Vista®
- Windows Server® 2008
- Windows Server® 2008 R2
- Windows® 7
- Windows Server® 2012
- Windows® 8

When a personal computer is set to enter the power save mode (hibernate, sleep) or the fast startup function is enabled, the following message is displayed and the setting is changed by MELSECPowerManager.


MELSEC Interface Board
For safety use of MELSEC Interface Board, the power options of Windows were changed as follows.
-Invalidating the sleep settings.
-Changing the settings of power button action in 'shutdown'.
OK
MELSEC Interface Board
For safety use of MELSEC Interface Board, the power options of Windows were changed as follows.
-Invalidating the sleep settings.
-Changing the settings of power button action in 'shutdown'.
-Invalidating the fast startup settings.
OK

Appendix 13.1 Installing MELSECPowerManager

MELSECPowerManager is installed automatically when the software package is installed to a personal computer.
The operation starts after the personal computer is restarted.

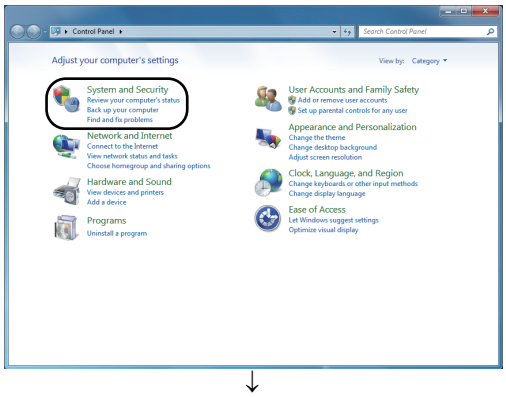
Appendix 13.2 Uninstalling MELSECPowerManager

MELSECPowerManager is uninstalled automatically when the software package is uninstalled.
However, it is not uninstalled when another software package of MELSEC interface board is installed to the personal computer.
Uninstall all software packages for MELSEC interface board installed on the personal computer to uninstall MELSECPowerManager.

Appendix 13.3 Checking MELSECPowerManager

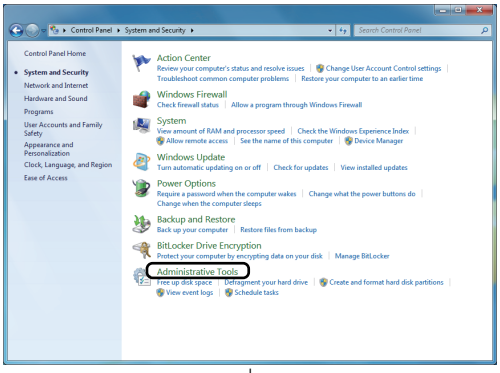
The following explains how to check the installation and operating status of MELSECPowerManager.

The following is a setting example when using Windows® 7.



↓

1. **Open [Control Panel] - [System and Security].**



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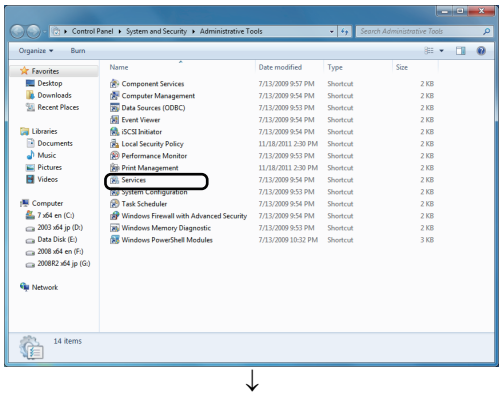
2. **Select [Administrative Tools].**



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3. **Double-click [Services].**

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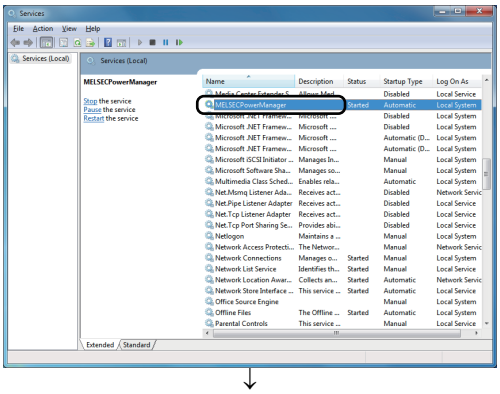


↓

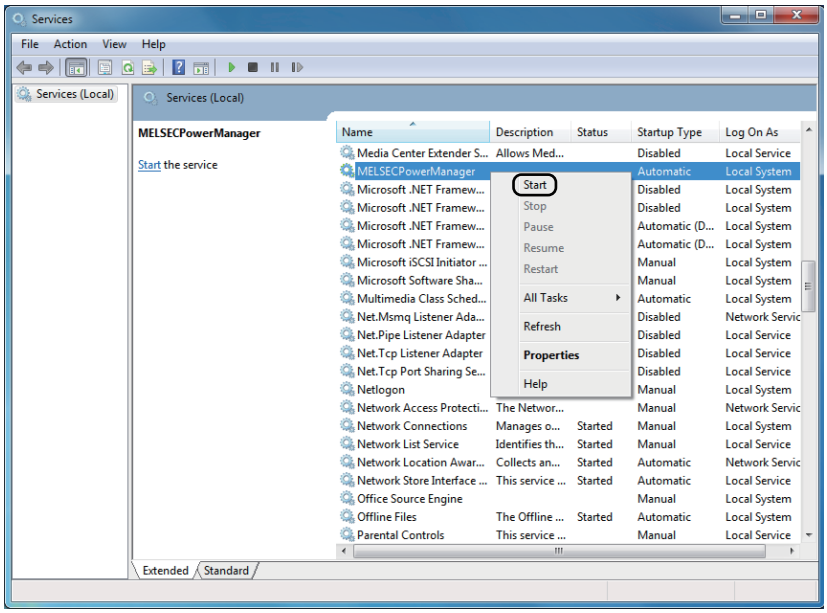
(Setting completion)

4. Check if MELSECPowerManager is registered.

Point

- When MELSECPowerManager is disabled, the personal computer may enter the power save mode (hibernate, sleep) automatically depending on the settings on the personal computer. Do not disable MELSECPowerManager because the CC-Link IE Field Network board does not function normally if the personal computer enters the power save mode (hibernate, sleep). For the behavior of the board when the personal computer enters the power save mode (hibernate, sleep), or the fast startup function is enabled, refer to the following appendix.

  Page 268, Appendix 12
- If MELSECPowerManager is disabled accidentally, right-click "MELSECPowerManager" on the "Services (Local)" screen and select "Start" from the menu.



Appendix 14 EMC AND LOW VOLTAGE DIRECTIVES

Compliance with the EMC Directive, which is one of the EU directives, has been mandatory for the products sold within EU member states since 1996 as well as compliance with the Low Voltage Directive since 1997.
To prove the compliance, manufactures must issue an EC Declaration of Conformity and the products must bear a CE marking.

(1) Sales representative in EU member states

The authorized representative in EU member states will be:
Company name: Mitsubishi Electric Europe BV
Address: Gothaer Strasse 8,40880 Ratingen,Germany

Appendix 14.1 Measures to comply with the EMC Directive

The EMC Directive sets two requirements for compliance: emission (conducted and radiated electromagnetic energy emitted by a product) and immunity (the ability of a product to not be influenced by externally generated electromagnetic energy).
This section summarizes the precautions for machinery constructed with the CC-Link IE Field Network board to comply with the EMC Directive.
These precautions are based on the requirements of the EMC Directive and the harmonized standards. However, they do not guarantee that the entire machinery constructed according to the descriptions complies with the EMC Directive. The manufacture of the machinery must determine the testing method for compliance and declare conformity to the EMC Directive.

(1) EMC Directive related standards

(a) Emission requirements

Standard	Test item	Test description	Value specified in standard
EN61131-2: 2007	CISPR16-2-3 Radiated emission*1	The electromagnetic wave which the product emits to the external space is measured.	• 30 to 230MHz, QP: 40dBμV/m (measured at 10m distance)*2 • 230 to 1000MHz, QP: 47dBμV/m (measured at 10m distance)
	CISPR16-2-1, CISPR16-1-2 Conducted emission*1	The noise level which the product emits to the power line is measured.	• 0.15 to 0.5MHz, QP: 79dB, Mean: 66dB *2 • 0.5 to 30MHz, QP: 73dB, Mean: 60dB

*1 : The tests were conducted installed in a control panel.
*2 : QP: Quasi-Peak value, Mean: Average value

(b) Immunity requirements

Standard	Test item	Test description	Value specified in standard
EN61131-2: 2007	EN61000-4-2 Electrostatic discharge immunity*1	An electrostatic discharge is applied to the enclosure of the equipment.	• 8kV Air discharge • 4kV Contact discharge
	EN61000-4-3 Radiated, radio-frequency, electromagnetic field immunity*1	An electric field is radiated to the product.	80% AM modulation @1kHz • 80 to 1000MHz: 10V/m • 1.4 to 2.0GHz: 3V/m • 2.0 to 2.7GHz: 1V/m
	EN61000-4-4 Fast transient burst immunity*1	Burst noise is applied to power lines and signal lines.	• AC/DC power, I/O power, and AC I/O (unshielded) lines: 2kV • DC I/O, analog, and communication lines: 1kV
	EN61000-4-5 Surge immunity*1	Lightning surge is applied to power lines and signal lines.	• AC power, AC I/O power, and AC I/O (unshielded) lines: 2kV CM, 1kV DM • DC power and DC I/O power lines: 0.5kV CM, 0.5kV DM • DC I/O, AC I/O (shielded), analog, and communication lines: 1kV CM
	EN61000-4-6 Conducted RF immunity*1	High-frequency noise is applied to power lines and signal lines.	0.15 to 80MHz, 80% AM modulation @1kHz, 10Vrms
	EN61000-4-8 Power-frequency magnetic field immunity*1	The product is immersed in the magnetic field of an induction coil.	50/60Hz, 30A/m
	EN61000-4-11 Voltage dips and interruption immunity	Power voltage is momentarily interrupted.	• 0%, 0.5 period, starting at zero-crossing • 0%, 250/300 period (50/60Hz) • 40%, 10/12 period (50/60Hz) • 70%, 25/30 period (50/60Hz)

*1 : The tests were conducted installed in a control panel.

(2) Installation in a control panel

The installation in the control board ensures safety as well as effective shielding of personal computer-emitted electromagnetic noise.

(a) Control panel

- Use a conductive control panel.
- Mask off the area used for grounding when securing the top or bottom plate to the control panel using bolts.
- To ensure electrical contact between the inner plate and the control panel, mask off the bolt installation areas of an inner plate so that conductivity can be ensured in the largest possible area.
- Ground the control panel with a thick ground cable so that low impedance can be ensured even at high frequencies.
- Keep the diameter of the holes on the control panel to 10cm or less. If the diameter is larger than 10cm, electromagnetic wave may be emitted. In addition, because electromagnetic wave leaks through a clearance between the control panel and its door, reduce the clearance as much as possible. Use of EMI gaskets (sealing the clearance) can suppress undesired radiated emissions.

  The tests by Mitsubishi were conducted using a control panel having the damping characteristics of 37dB (maximum) and 30dB (average) (measured at 3m distance, 30 to 300MHz).

(b) Wiring power and ground cables

- Provide a ground point to the control panel near the power supply module. Ground the LG and FG terminals of the power supply module to the ground point with the thickest and shortest ground cable possible (30cm or shorter).

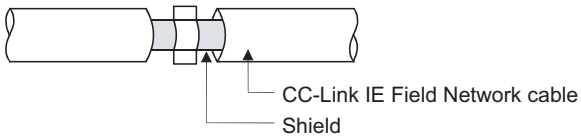
(3) Cables

Use a shielded cable for the cable extended out of the control panel.
If a shielded cable is not used or not grounded correctly, the noise immunity will not meet the required value.

(a) CC-Link IE Field Network cables

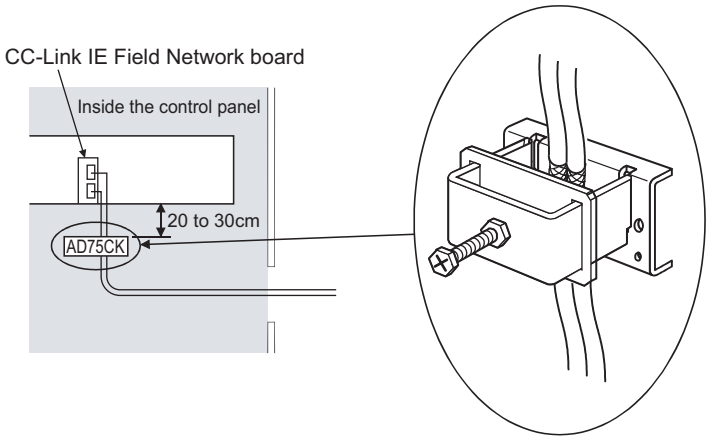
The precautions for using CC-Link IE Field Network cables are described below.

- Use CC-Link IE Field Network cables (SC-E5EW-S☐M, manufactured by Mitsubishi Electric System & Service Co., Ltd.).
- A CC-Link IE Field Network cable is a shielded cable. Remove a part of the shield as shown below and ground the largest possible exposed section to the ground.



(b) Grounding cables with a cable clamp

Ground the shield of the external wiring cable to the control panel with the AD75CK cable clamp (Mitsubishi). (Ground the shield within 20 to 30cm from the module.).



For details on the AD75CK, refer to the following.

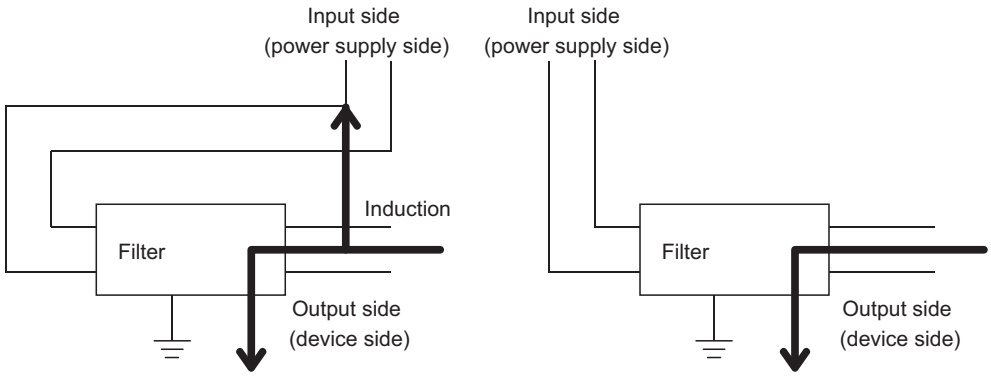
AD75CK-type Cable Clamping Instruction Manual

(4) Noise filter (power supply line filter)

Noise filter is effective for reducing conducted noise in the 10MHz or less frequency. (Use of a noise filter can suppress noise.)

The installation precautions are described below.

- Do not bundle the cables on the input side and output side of the noise filter. If bundled, the output side noise will be induced into the filtered cable on the input side.



Noise will be induced when the input and output cables are bundled.

Separately install the input and output cables.

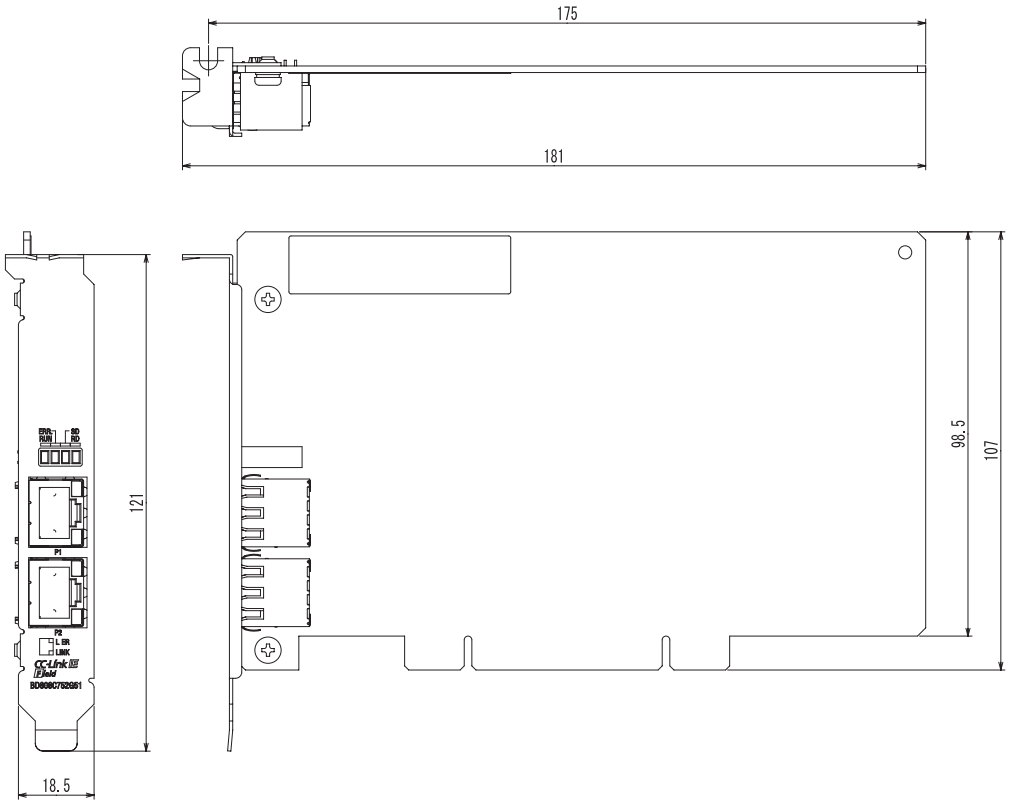
- Ground the ground terminal of the noise filter to the ground point of the control panel with the shortest ground wire possible (approximately 10cm).

Appendix 14.2 Measures to comply with the Low Voltage Directive

The CC-Link IE Field Network board is out of the requirement for conformance to the Low Voltage Directive, since it does not use the power supply in the range of 50 to 1000V AC and 75 to 1500V DC.

Appendix 15 External Dimensions

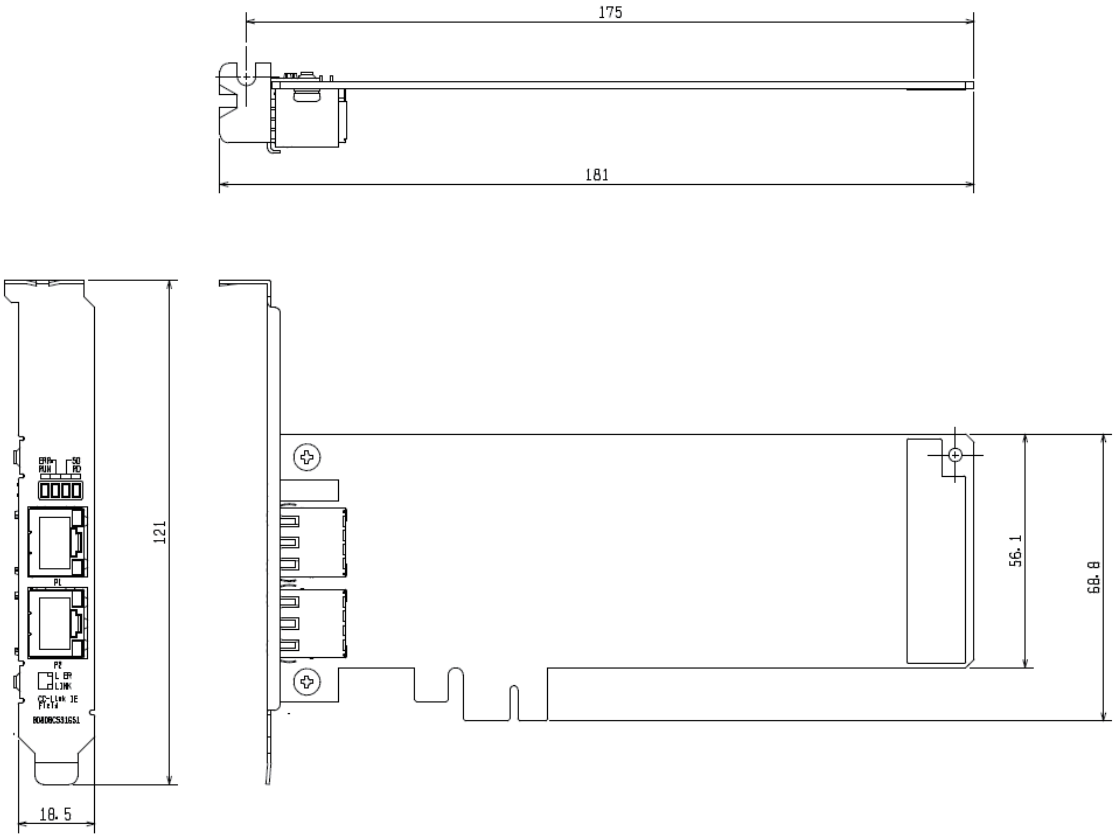
Appendix 15.1 Q80BD-J71GF11-T2



(unit: mm)

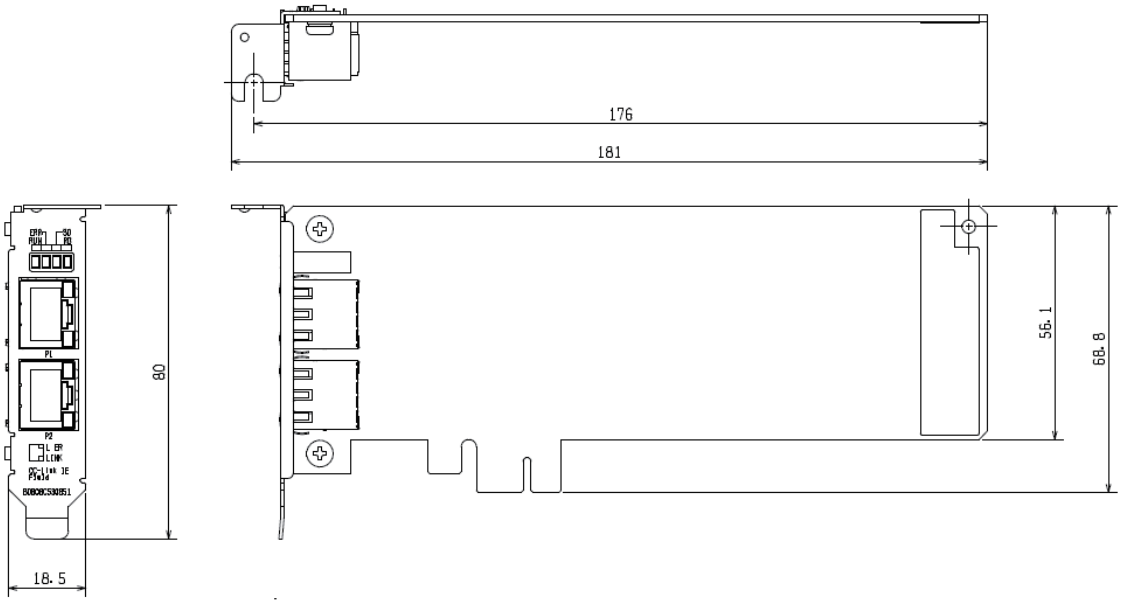
Appendix 15.2 Q81BD-J71GF11-T2

(1) Q81BD-J71GF11-T2 (Standard size)



(unit: mm)

(2) Q81BD-J71GF11-T2 (Low profile size)



(unit: mm)

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REVISIONS

*The manual number is written at the bottom left of the back cover.

Print date	*Manual number	Revision
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Mar., 2012	SH-080980ENG-B	Addition Appendix 13, Appendix 14 Correction Section 2.5, Section 7.1.1, Section 7.1.3, Section 7.2
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Warranty

Please confirm the following product warranty details before using this product.

1. Gratis Warranty Term and Gratis Warranty Range

If any faults or defects (hereinafter "Failure") found to be the responsibility of Mitsubishi occurs during use of the product within the gratis warranty term, the product shall be repaired at no cost via the sales representative or Mitsubishi Service Company.
However, if repairs are required onsite at domestic or overseas location, expenses to send an engineer will be solely at the customer's discretion. Mitsubishi shall not be held responsible for any re-commissioning, maintenance, or testing on-site that involves replacement of the failed module.
[Gratis Warranty Term]
The gratis warranty term of the product shall be for one year after the date of purchase or delivery to a designated place.
Note that after manufacture and shipment from Mitsubishi, the maximum distribution period shall be six (6) months, and the longest gratis warranty term after manufacturing shall be eighteen (18) months. The gratis warranty term of repair parts shall not exceed the gratis warranty term before repairs.
[Gratis Warranty Range]

(1) The range shall be limited to normal use within the usage state, usage methods and usage environment, etc., which follow the conditions and precautions, etc., given in the instruction manual, user's manual and caution labels on the product.
(2) Even within the gratis warranty term, repairs shall be charged for in the following cases.
   1. Failure occurring from inappropriate storage or handling, carelessness or negligence by the user. Failure caused by the user's hardware or software design.
   2. Failure caused by unapproved modifications, etc., to the product by the user.
   3. When the Mitsubishi product is assembled into a user's device, Failure that could have been avoided if functions or structures, judged as necessary in the legal safety measures the user's device is subject to or as necessary by industry standards, had been provided.
   4. Failure that could have been avoided if consumable parts (battery, backlight, fuse, etc.) designated in the instruction manual had been correctly serviced or replaced.
   5. Failure caused by external irresistible forces such as fires or abnormal voltages, and Failure caused by force majeure such as earthquakes, lightning, wind and water damage.
   6. Failure caused by reasons unpredictable by scientific technology standards at time of shipment from Mitsubishi.
   7. Any other failure found not to be the responsibility of Mitsubishi or that admitted not to be so by the user.

2. Onerous repair term after discontinuation of production

(1) Mitsubishi shall accept onerous product repairs for seven (7) years after production of the product is discontinued.
Discontinuation of production shall be notified with Mitsubishi Technical Bulletins, etc.
(2) Product supply (including repair parts) is not available after production is discontinued.

3. Overseas service

Overseas, repairs shall be accepted by Mitsubishi's local overseas FA Center. Note that the repair conditions at each FA Center may differ.

4. Exclusion of loss in opportunity and secondary loss from warranty liability

Regardless of the gratis warranty term, Mitsubishi shall not be liable for compensation of damages caused by any cause found not to be the responsibility of Mitsubishi, loss in opportunity, lost profits incurred to the user by Failures of Mitsubishi products, special damages and secondary damages whether foreseeable or not , compensation for accidents, and compensation for damages to products other than Mitsubishi products, replacement by the user, maintenance of on-site equipment, start-up test run and other tasks.

5. Changes in product specifications

The specifications given in the catalogs, manuals or technical documents are subject to change without prior notice.

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CC-Link IE Field Network Interface Board User's Manual (For SW1DNC-CCIEF-B)

MODEL	SW1-CCIEF-B-U-E
MODEL CODE	13JZ58
SH(NA)-080980ENG-F(1401)KWIX	

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